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Comparison among different decommissioning funds methodologies for nuclear installations

Final Report

Country Report Spain

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Final Country Report
Spain

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Contents

Summary	1
1. Introduction and overview	5
1.1 General policy with regards to decommissioning	6
1.2 The legal basis for the financing of decommissioning in the country	6
1.3 Nuclear installations in the country	8
2. Decommissioning strategies and costs	14
2.1 Current and past decommissioning activities	14
2.2 Spent fuel and waste management and disposal in Spain	15
2.4 Cost estimates for decommissioning activities	18
2.4 Future decommissioning strategies	25
3. Funds and fund management	27
3.1 Setting aside funds	27
3.2 Management of funds	31
3.3 Special cases: Fall-back option and transfer of ownership	34
4. Transparency of the funding schemes to the public	40
5. Stakeholder analysis	42
6. Conclusions and recommendations	46
General References	50
List of Annexes	51
List of Accronyms	84

Summary

The Spanish radioactive waste management agency ENRESA was set up in 1984 in order to organise the management of spent fuel, radioactive waste and decommissioning activities of nuclear facilities. The Royal Decree 1349/2003 updates ENRESA's responsibilities, including processing, conditioning, removal and transport of nuclear waste, the establishment of a system for the long-term management of nuclear waste, and the management of financial resources. ENRESA, a public sector company, will soon be transformed from a Public Limited Company (S.A.) into a Public Business Entity (EPE). By doing so, the state tends to increase its control over the company and to simplify the organisational scheme.

In order to finance backend activities one major fund (hereafter the Fund) was set up, which is managed by ENRESA and controlled by the so-called Tracking and Control Committee, composed of high-level representatives of several Spanish ministries. In addition, ENRESA has to submit regular reports concerning its activities to the Ministry of Industry, Tourism and Trade (MITYC). The financial resources of this restricted fund under state control shall be used for the activities as specified in the General Radioactive Waste Plan (PGRR). The PGRR has to be approved by the Government and establishes the framework of the Spanish national policy on the management of radioactive waste and spent fuel. This includes the decommissioning activities of the country's major nuclear facilities, i.e. all nuclear power plants, the fuel manufacturing facility Juzbado, and those uranium mines that have been in operation before 1984. Moreover, all other activities contemplated in the PGRR, which is drawn up at least every four years or when the MITYC requires it, are financed by the means of this Fund, including R&D costs and others.

The income of the Fund is regulated by Royal Decree (RD) and, if necessary, adjusted on an annual basis. There are four different sources of income for the Fund:

- a certain percentage on the electricity sales price;
- contributions by the licensees of the nuclear power plants as a function of the gross kilowatt-hours produced;
- annual payments by the owner of the fuel manufacturing facility Juzbado;
- service fees paid by other producers of radioactive waste.

The establishment of this system of payments and responsibilities covers the decommissioning activities of most of the Spanish nuclear facilities. However, in the case of uranium mining post 1984 (ENUSA), the operation of research reactors (Labein) and other research activities (CIEMAT) the respective owner of the facility is independently responsible for decommissioning activities and their financing. Even though these activities are mentioned in the PGRR they are not subject to the financing by the Fund that is managed by ENRESA.

ENUSA, a national public sector company, is the only company in Spain that is still operating uranium mines and mills. The last facilities in operation at Saelices el Chico

are planned to be shut down by 2008. If a uranium facility was in operation pre- and post-1984, the respective share of financial responsibility is specified by contract between ENRESA and ENUSA.

The only binding legal text for the decommissioning of uranium mining sites is the RD 2994/1982. It states that for all mining activities in Spain an internal Restoration Fund (Fondo de Restauración) has to be set up for the financing of the clean-up and remediation of the mining sites after the operational period. There is no regulation about the actual amount of money that has to be accumulated and no control system of the fund was set up. The only binding requirement is that the fund should be available at the time of closure, otherwise permission of closure will not be granted by the authorities.

The management and financing of the research reactor ARBI in Bilbao fell within the responsibility of the owner. Labein contracted services of ENRESA but was fully responsible for the decommissioning activities and its financing. No fund for the decommissioning activities of the research reactor ARBI was set up since the relatively small cost of approximately 300,000 Euro were covered by the company's financial resources in the year the decommissioning activities took place.

Apart from few exceptions like the ARBI reactor, facility specific information on cost estimates for decommissioning and waste management and the precise cost calculation methodology is not publicly available. Also, information on the management of the provisions of ENRESA's restricted Fund and ENUSA's internal fund has not been made public. In particular, it is unclear, to what extent provisions are covered by earmarked assets. ENRESA's reports to the Tracking and Control Committee are not public either.

Most stakeholders in the nuclear energy sector in Spain are public entities or at least their stakeholders are under state control and they seem to be confident in the decommissioning and waste management funding system set up. There were some calls for minimum harmonised standards in the field on the EU level, but they were not specific.

A number of uncertainties remain in the Spanish system. They include:

- The reliability of the decommissioning and waste management cost estimates is difficult to judge. There is no precedent of full scale dismantling of a power reactor.
- The clean-up and remediation process of most of the closed uranium mines is considered accomplished. But it is unclear what were the standards and whether the state of the sites can be considered stable.
- There is no regulation that specifies the methodology for the calculation of the provisions for clean-up and remediation of uranium mines and mills. The operator also seems to be free to manage the internal fund without any formal external control.

- There is no operational long term interim or final disposal site for intermediate and high-level wastes. The costs associated with the implementation of such facilities remain speculative.
- According to recent opinion polls, the Spanish citizens are the least favourable to nuclear power of all nuclear countries within the EU. Attempts to site and build final radioactive waste disposal facilities could encounter significant opposition with lengthy and expensive licensing procedures.
- ENRESA takes over responsibility for radioactive waste once it has been accepted from the producer. It also becomes responsible for a nuclear power plant site three years after shutdown (and spent fuel removal). It is unclear how the polluter-pays principle can be guaranteed under these circumstances.
- There is little or no public information about facility specific data. Even utilities complain of the lack of access to information concerning ENRESA's cost calculations and Fund management.
- There is little or no possibility for the public to influence the decision making process. The so far unprecedented possibility for the public to comment on the latest version of the national General Radioactive Waste Plan (PGRR) did not influence its final edition.

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Mykle Schneider

1. Introduction and overview

As of 1 July 06, Spain operates eight nuclear reactors in seven different locations with a total installed capacity of 7,734 MW.¹ The gross electricity production from nuclear plants was 63.6 TWh in 2004, which represented 22.7% of the total national production.²

Although the consumption of primary energy is constantly rising,³ the present Spanish government of the Spanish Socialist Worker's Party (PSOE) has planned to diminish and eventually phase out the use of nuclear energy. The National Energy Programme,⁴ which is part of the National Plan 2004-2007,⁵ focuses on two key aspects to cope with the rising energy demand: Firstly, the use of renewable energies, which will be promoted by means of the Plan for Renewable Energies in Spain 2005-2010.⁶ Secondly, the increase of energy efficiency.⁷

The Spanish Government has recently set up a round-table managed by the Ministry of Industry (MITYC)⁸ to discuss the future of nuclear energy in Spain with all important stakeholders in the field⁹. The aim of this discussion group is to give recommendations to the government. One of the subjects discussed will be the possibility to substitute the use of nuclear energy by other sources. In his last State of the Nation Speech on 30 May 2006, the Spanish Prime Minister, Zapaterro, confirmed his government's commitment to phase out nuclear energy and to initiate this process before the next national elections.

Nonetheless, the Spanish Popular Party, now in opposition, believes that the use of nuclear energy is indispensable to guarantee supply security and opts consequently for maintaining nuclear energy in the country's energy mix. From the PP's point of view, a great range of energy sources, including nuclear power, is necessary to guarantee supply security. Furthermore, some believe that the use of nuclear energy is necessary to meet the Kyoto targets.

Public opinion in Spain is very sceptical regarding the use of nuclear energy. The last European survey about "Public Opinion, Public information and public involvement in radioactive waste management in the European Union" has revealed that 80% of the Spanish people polled are worried about nuclear waste. At the same time only 1% of the Spanish questioned considered themselves well informed about the management

¹ MITYC (2004), p. 51.

² MITYC (2004), p. 51.

³ 4,1% in 2004. See MITYC, 2004.

⁴ Programa Nacional de Energía.

⁵ Plan Nacional 2004 – 2007.

⁶ MITYC (2005): Plan de Energías Renovables en España 2005-2010.

⁷ MITYC (2005): Estrategia de Ahorro y Eficiencia Energética en España 2004-2012 – Plan de Acción 2005-2007.

⁸ Ministerio de Industria, Turismo y Comercio (Ministry of Industry, Tourism and Trade)

⁹ Mesa de Diálogo sobre la Evaluación de la Energía Nuclear en España.

of nuclear waste.¹⁰ There are currently no projects for the construction of new nuclear power plants in Spain.¹¹ In another survey for the European Commission, Spain rated lowest in the acceptance of nuclear energy amongst all EU countries that currently operate nuclear power plants, with only 18% totally or fairly in favour.¹²

1.1 General policy with regards to decommissioning

The Spanish Government establishes the general lines of the national policy on the management of radioactive waste and spent fuel through the General Radioactive Waste Plan (PGRR)¹³, which was first approved in 1987. The fifth PGRR was in force from 1999 until this year. On 23 June 2006 the 6th PGRR was approved by the Council of Ministers, including the latest cost estimates up to the year 2070.

The forerunner of these plans, the National Energy Plan for the period 1983-1992, stated that the irradiated fuel from the country's light water reactors was considered to be waste and thus was not to be reprocessed. Consequently, the nuclear fuel policy established was based on an "open fuel cycle" approach [Spanish Government, 2005].¹⁴ This approach changed with the fifth PGRR.

The fifth PGRR makes a clear distinction between spent fuel and high level waste and points out the need to refer to existing possibilities for direct disposal or its reprocessing to recover fissionable materials and reuse them as new fuel ("closed fuel cycle"). Nonetheless, for the purposes of economic calculation and planning, the fifth PGRR is based on the direct disposal scenario [Spanish Government, 2005].¹⁵

1.2 The legal basis for the financing of decommissioning in the country

In 1964, a general law, the Nuclear Energy Act, law 25/1964 was introduced into the Spanish Legal System. The Royal Decree (RD) 2967/1979 of 7 December 1979 on the Ordering Activities within the Nuclear Fuel Cycle¹⁶ was the first legal basis for decommissioning in Spain. Further regulations followed in the 1980s. In 1984, ENRESA, the creation of the Spanish radioactive waste management agency,¹⁷ was authorised by RD 1522/1984. Its main functions are the management of radioactive

¹⁰ See Taylor/Webster/EK (2004): Public Opinion, Public information and public involvement in radioactive waste management in the European Union.

¹¹ Spanish Government, 2005, p. 5.

¹² Eurobarometer, September 2005

¹³ Span. Plan General de Residuos Radiactivos

¹⁴ An exception was only made for spent fuel from Vandellós I.

¹⁵ The only spent fuel reprocessed, in France, up to now has been fuel from Vandellós I and certain quantities from José Cabrera. [Spanish Government, 2005].

¹⁶ Royal Decree 2967/1979, of 7 December 1979, on the Ordering of Activities within the Nuclear Fuel Cycle (BOE 14.01.1980, modified by Royal Decree 1899/1984, of 1 August 1984, BOE 27.10.1984).

¹⁷ Empresa Nacional de Residuos Radiactivos S.A.

wastes generated in Spain and the dismantling of nuclear and other facilities containing radioactive substances [Spanish Government 2006]. In addition, the RD 1899/1984, on the ordering of fuel cycle activities, requires and regulates the contracts drawn up between ENRESA and the companies owning nuclear power plants and other facilities used for the manufacturing of uranium concentrates and nuclear fuels, to collect, during the operating life time of these installations, the necessary financial resources for their dismantling. These amounts, together with the financial yield obtained by ENRESA, is allocated to the build up of a fund. [Colonco/Iberdrola 2005]. The payments for future decommissioning activities are collected during the operating lifetime of all facilities. Once the nuclear waste is transferred to ENRESA all liabilities are with the fund manager too. In the case of the Spanish nuclear power plants, ENRESA assumes responsibility three years after the final shut down of each facility (see chapter 3). Over the years, the responsibilities of ENRESA have broadened and therefore the RD 1349/2003, of 31 October 2003, on the organisation of ENRESA's activities and their financing¹⁸ summed up all the previously added legal standards¹⁹ into a single text. RD 1349/2003 nullified RD 1522/1984.

The RD 1349/2003 defines ENRESA's responsibilities and in particular:

- to process and condition radioactive waste,
- to establish systems for the removal, transfer and transport of radioactive waste,
- to manage operations relating to the dismantling and decommissioning of nuclear and radioactive facilities,
- to definitively and safely condition tailings originating from the mining and milling of uranium concentrates,
- to establish systems guaranteeing the safe long-term management of its radioactive waste disposal facilities,
- to carry out the necessary technical and economic-financial studies, taking into account the deferred costs deriving from its functions, for establishment of the corresponding economic requirements,
- to manage the Fund for the financing of activities included in the General Radioactive Waste Plan, in accordance with the provisions of the said RD and other activities.²⁰

¹⁸ Official State Gazette (BOE) number 268 of 8 November 2003, pp. 39654 and following.

¹⁹ The laws referred to in the mentioned RD are Law 13/1996 of 30 December 1996 on Fiscal, Administrative and Social Measures, in relation to the financing of costs deriving from the removal and management of radioactive lightning rod headers (art. 172), Law 14/1999, of 4 May 1999, on Public Prices and Rates for the services rendered by the CSN, in relation to the possible financing of the management of radioactive waste generated in certain exceptional circumstances (second additional provision) and Law 24/2001, of 27 December 2001, on fiscal, administrative and social measures, in relation to the Fund for the financing of the activities contemplated in the PGRR (fourteenth additional provision).

²⁰ see Art. 4 of RD 1349/2003.

Notwithstanding the above mentioned, it should be stressed that only the activities outlined in the General Radioactive Waste Plan are financed by the fund which is managed by ENRESA.²¹ The financial means of the fund are or will be used for the decommissioning of all nuclear power plants, of the Juzabdo fuel manufacturing facility and for the clean-up of all mining activities carried out prior to 1984, i.e. the establishment of ENRESA.

Recently, the Royal Decree Law, 5/2005, of 11 March 2005, on Urgent Reforms to Promote Productivity and the Improvement of Public Contracting,²² modifies the financing system via invoicing the nuclear power plant owners for covering the costs attributable to the operation after 31 March 2005 [Colonco/Iberdrola 2005]. Therefore, the existing financing system changes insofar as the polluter pay principle was introduced for the operator of nuclear power plants.

In addition, Article 25 of the same RD modifies the Electricity Industry Act, Law 54/1997, of 27 November 1997, establishing that the state shall assume the ownership of the radioactive waste once it is stored in the planned central interim storage facility or final disposal facility. The state shall likewise be responsible for whatever surveillance might be required following the decommissioning of a nuclear or radioactive facility, after the period of time established in the corresponding statement of closure [Spanish Government 2005, p. 64]. The statement of closure²³ is granted by the responsible state authorities, i.e. the MITYC and the CSN, after all necessary decommissioning activities have been carried out. This last specification was introduced by the RD Law 24/2005. It introduces certain changes in the financing system of the Fund and the transformation of ENRESA into a Public Business Entity (EPE).²⁴ The law will most probably come into force this year.

1.3 Nuclear installations in the country

In Spain, nuclear power plants, uranium mines, uranium mills, research reactors and one fuel manufacturing facility (Juzbado) were or continue to be in operation.

As mentioned above, there are seven nuclear power plants in nine different locations. Two units have been shut down of which one reactor, Vandellós I, is already in the state of dismantling (stage 2). Following a major accident on 19 October 1989, the reactor was shut down for safety reasons one day later. The accident was classified “level 3” on the International Nuclear Event Scale and is considered to be one of the worst accidents in a nuclear power plant in Western Europe. On 30 May 1990 the Ministry of Industry opted for the definitive closure of the reactor, because of the high costs that would have occurred in the case of reparation.²⁵ By 28 October 1994 the

²¹ See RD 1349/2003, art. 1, para. 1.

²² Official State Gazette (BOE) No 62 of 14 March 2005, pp. 8832 and following.

²³ Span. Declaración de Clausura

²⁴ Entidad Pública Empresarial

²⁵ http://www.csn.es/plantillas/frame_nivel1.jsp?id_nodo=1935&&keyword=&auditoria=F

spent fuel had been removed from the pools. In 1998 the ownership of the nuclear power plant passed over to ENRESA, now responsible for the decommissioning activities, which were to be carried out in two stages with an interim period of “dormancy” until the year 2028.²⁶ ENRESA considers the experience gained by decommissioning Vandellós I as one of the most import projects from an economic and strategic point of view.²⁷

The oldest nuclear power plant in Spain, José Cabrera (Zorita), which started operating in 1968, was definitely shut down on 30 April 2006 in compliance with a ministerial order dated 14 October 2002. The nuclear power plant has been in operation for 38 years and not, as previously planned, for 40 years. As with all nuclear power plants in Spain, decommissioning will start three years after the definitive shutdown and the following removal of the spent fuel from the core and the pools. The closure of José Cabrera is of special importance since it might put additional pressure on the Spanish government in finding a Central Interim Storage Facility²⁸ to handle the decommissioning wastes from 2009 onwards.²⁹ Both shut down nuclear power plants and Ascó I, operating in the period from 1984 until approximately 2023, will be analysed in this report.

With respect to research reactors in Spain, two reactors from the same type have been decommissioned and dismantled in the last couple of years. Firstly, the research reactor Argos (Barcelona) in the period from 2002 until 2003. Secondly, the research reactor Arbi located in the surroundings of Bilbao, decommissioned and dismantled between August and December 2004 [Porro, 2006]. With regards to the latter, decommissioning activities were given by a ministerial order from 14 May 2002.³⁰ The owner of the facility, Labein, was responsible for all required activities. This facility will be analysed in this report.

All still operating uranium mill and uranium mines in Spain are managed by ENUSA, a public sector company whose shareholders are the CIEMAT and the SEPI, both directly under the responsibility of the Ministry of Science and Technology and the Ministry of Economy. With regards to decommissioning activities, many uranium mills and uranium mines were dismantled and decommissioned in the recent past. To understand the responsibilities for the management and the financing, in the case of uranium mines the decommissioning of La Mina in Saelices el Chico and Lobo (La Haba), in the case of uranium mills the dismantling of the Andujar Uranium Mill and Elefante and Quercus (Saelices el Chico) will be analysed in this report. All installations excepts the facilities at Saelices el Chico have already been decommissioned.

²⁶ <http://www.enresa.es>

²⁷ <http://www.enresa.es>

²⁸ Almacén Temporal Centralizado (ATC)

²⁹ Furthermore, the pools for temporary storage in the nuclear power plant at Confrentes and Ascó are reaching saturation. See Consejo de Ministros (2006), p. 17.

³⁰ ORDEN ECO/1312/2002, de 14 de mayo, por la que se otorga a los Laboratorios de Ensayos e Investigaciones Industriales (LBEIN) autorización de desmantelamiento del reactor experimental ARBI. (BOE 134/2002).

Finally, it is worth mentioning the only fuel manufacturing facility in Spain, Juzbado, in operation since 1985 and managed by ENUSA. The decommissioning financing is guaranteed via the fund that is managed by ENRESA. This facility will not be analysed in detail in this report.

Table 1 Overview on those nuclear installations in Spain analysed in more detail for the purpose of this report³¹

Nuclear facility	Short name	Country	Kind of facility:	Output (Power in MW _{el} for NPP)	First criticality (in case of reactors)	Operational period	Operating company	Name of quoted companies holding shares in the nuclear facility if any**	Decommissioning started in year	Decommissioning stage*	To be analysed in WP 1	Source
Lobo (La Haba, Badajoz)	Mina and Planta Lobo-G	ES	U mines and U mill (no separate information available)	---	---		ENUSA	---	1990	Restored 1990-97 Long-term stewardship and monitoring	x	(1) (6)
Fábrica de Uranio de Andujar (FUA) (Andujar Uranium Mill-AUM)	FUA	ES	Uranium Mill	---	---	1959- 1981	ENRESA	---	1991	Decommissioned and dismantled 1991-1994 Surveillance	x	(1)
Saelices el Chico (Salamanca)	Elefante	ES	Uranium Mill	---	---	1973-1993	JEN (later CIEMAT) – ENUSA (e)		2001	Decommissioned and dismantled (2001 –2004) Surveillance and control programme submitted for the period of compliance prior to decommissioning	x	(1)

³¹ In total, there are eight nuclear power plants still in operation, two are shut down. Moreover, 24 uranium mines and five uranium mills, three research reactors, several storage facilities and one fuel manufacturing facility have been operating in Spain at some point.

Saelices el Chico (Salamanca) – Planta Quercus		ES	Uranium Mill	---	---		ENUSA	---	---	Licensing. Decommissioning is ought to be finished by 2008.	x	(6)
Saelices el Chico (Salamanca) – La mina		ES	Uranium mine	---	---		ENUSA	---	2004	Decommissioning from 2004-2008	x	(6)
Arbi Experimental reactor Bilbao	Arbi	ES	Re-search Reactor		---	1962-1974	Labein	---	2004	Decommissioned & dismantled 2004-05	x	(1)
Vandellos 1	---	ES	NPP	480/500	19.10.89	May-Aug 1972 - 1995	Hifrensa	Electricité de France 25%; FECSA 23%; Hidroeléctrica de Cataluña 23% ; ENHER 23% F.E. del Segre 6%	July 1990	« dormancy » since 01/05 level 2	x	(1)
José Cabrera	---	ES	NPP	142/150	---	1968-30.04.2006	Unión Fenosa	---	Mai 2006	Removal of spent fuels	x	(1)
Ascó I	---	ES	NPP	996/1033	---	1984-ca. 2023	ANAV Owner: Endesa Generación, S.A.(100%)	---		In operation	x	(1)

*Kind of facility: NPP = Nuclear Power Plant

** Quoted: quoted on the stock exchange. Quoted companies directly or indirectly owning the nuclear installation or at least a part of it.

Decommissioning stages

Operating: Still in operation; not shut down yet	0	Decommissioning announced
1 Decommissioning to stage 1	2	Decommissioning to stage 2
3 Decommissioning to stage 3		

Complementary information:

a) partly converted into a museum	b) converted into a spent fuel facility
c) Equipment dismantled, building to be reused	d) Contains damaged fuel elements
e) Chimney being partly dismantled	f) used as radioactive waste store

Notes:

- (a) Starting in February 2001, restoration operations were undertaken on the mining area. It is estimated that they should be completed in 2008.
http://www6.mityc.es/energia/nuclear/Comb_Nuclear1.htm
- (b) Capacity 800 tU/y & annual production 255 tU, according to Nuclear Engineering Handbook 2005
- (c) About El Cabril, MITYC says: the present installation, which results from the extension of the previous installation, started operation in 1992 – with its present capacity, it is intended to cover the Spanish needs until 2016
- (d) For all operable reactors: IAEA PRIS Database for commercial operation dates and operators, MITYC for owners
- (e) ENRESA states: “In 1954 the Nuclear Energy Board (Junta de Energía Nuclear - JEN), now CIEMAT, initiated open cast mining operations at the FE and D deposits in the municipal area of Saelices el Chico (Salamanca), for the production of uranium concentrates. In 1972 the National Uranium Company (Empresa Nacional del Uranio - ENUSA) took over these operations until the year 2000, when these activities definitively ceased, a cumulative total of 5,700 tons of U308 concentrates having been obtained.”
Enusa Industrias Avanzadas, S.A. is affiliated with the Sociedad Estatal de Participaciones Industriales(SEPI), which has a 60% share, and the Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), with a 40% share

Sources:

- (1) Joint Convention on the Safety of Spent Nuclear Fuel Management and on the Safety of Radioactive Waste Management – Second Spanish National Report – October 2005
- (2) MITYC – Ministerio de Industria, Turismo y Comercio
 - On Fuel Cycle: http://www6.mityc.es/energia/nuclear/Comb_Nuclear1.htm
 - On Waste: <http://www6.mityc.es/energia/nuclear/residuos4.htm>
 - On nuclear power plants: http://www6.mityc.es/energia/nuclear/C_Nuclear4.htm
 - On La Haba: ORDEN ITC/2942/2004, de 2 de agosto, por la que se declara la clausura del emplazamiento restaurado de la planta Lobo-G en La Haba (Badajoz) http://217.116.15.226/xml/disposiciones/min/disposicion.xml?id_disposicion=79621&desde=min
- (3) NEI - Nuclear Engineering International, World Nuclear Industry Handbook 2005
- (4) ENRESA
- (5) IAEA-PRIS Database
- (6) Romero, 2006a

2. Decommissioning strategies and costs

2.1 Current and past decommissioning activities

It is obvious that the time estimated for each stage of decommissioning and the technical options for dismantling vary largely between the different types of nuclear installations. Regarding nuclear power plants in Spain, only the Vandellós I was partly decommissioned up to stage 2 and is at the moment in the stage of “dormancy” until the final decommissioning stage 3 shall be initiated in 2030 [ENRESA, 2006]. The preliminary decommissioning activities of José Cabrera, i.e. the removal of spent fuel, shall start shortly. The experience of decommissioning large scale nuclear power plants remains very limited in Spain.

The fifth and the sixth PGRR state that, theoretically, immediate decommissioning is to start three years after definitive shut down of each reactor and the following removal of the spent fuel from the pool [Colenco/Iberdrola, 2005]. The actual dismantling phase is expected to take seven more years for that the total time for decommissioning is ought to be ten years. It should be noted that this timescale is a target given in the PGRRs but is not legally binding.

In the case of Vandellós I an exception was made because of the special circumstances after the accident in the reactor. On the 17 January 2005 the permission for “dormancy” was given by public authorities. Up to now, the majority of the operations at Vandellós I were taken out without the need of remote control technique, regarding the fact that the interior of the reactor has not yet been touched [Gonzales/Espejo, 2006].

In the case of uranium mills and mines the moment when dismantling activities are carried out depends on the owner of the facility. Theoretically, there are no legally binding regulations [Gonzales/Espejo, 2006]. It would be possible to keep the mines in stand-by modus but this would only increase cost, especially with regards to the treatment of acid waters [Romero, 2006]. Only those facilities in Ciudad Rodrigo still have to be dismantled (Planta Elefante, Planta Quercus, Mina Fe and Mina D) and there are tight plans for dismantling activities that are scheduled to be finalized by 2008 [Gonzales/Espejo, 2006] followed by a surveillance period of at least five years [Romero, 2006]. The actual surveillance period is determined by the Nuclear Safety Council and can therefore exceed 5 years.

The technical decommissioning options for uranium mills and mines in Spain are very labour intensive but do not require much remote control technique since the level of radioactivity on those sites is limited [Romero, 2006].

Decommissioning activities at the research reactor Arbi in Bilbao were carried out from 2002 to 2004 even though the reactor had already ceased operating in 1974 [Porro, 2006]. The start of decommissioning activities lies within the responsibility of the owner and depends on the authorisation of the Spanish Nuclear Safety Council.

2.2 Spent fuel and waste management and disposal in Spain

The spent fuel management policy has changed in Spain over the years. In the National Energy Plan for the period of 1983 to 1992 and in the first PGRR of 1987 the Spanish Government stated that the irradiated fuel from nuclear power plants was considered to be waste that was not to be reprocessed, following a once-through approach. The fifth and the sixth PGRR make a clear distinction between spent fuel and high-level waste. However, for economic calculations and planning the once through approach is applied [Spanish Government, 2005].

The handling, storage and disposal of radioactive waste is responsibility of ENRESA, the Spanish radioactive waste management agency. The radioactive waste management services rendered by ENRESA to the operators of nuclear and radioactive facilities are governed by contracts based on corresponding type-contracts, which are subject to approval by the MITYC [Spanish Government, 2005]. Once the radioactive waste is removed from the facilities ENRESA becomes the owner and is legally responsible.

In accordance with the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management the seven nuclear power plant sites in Spain are also radioactive waste management facilities [Spanish Government, 2005, p. 5]. All light water reactors, like those operating in Spain, include pools in which the spent fuel can be temporarily stored. To assure the temporary storage of spent fuel until definitive solutions become available the following strategies are applied in Spain. Firstly, re-racking to take maximum advantage of the existing space in the pools. Secondly, if necessary, the spent fuel storage capacity can be extended by dry storage technologies. This strategy was applied in the case of the Trillo plant [Spanish Government, 2005, p 37].

The Second Spanish National Report for the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management [Spanish Government, 2005, p. 33 ff] presents the waste conditioning and storage facilities at the various sites:

The nuclear power plant management facilities consist of treatment plants for liquid wastes, based on desiccation or immobilisation in cement, and other installations for the conditioning of solid wastes by compacting or immobilisation in cement. The temporary storage facilities at the different plants are used as an intermediate step prior to the transport of the wastes to the El Cabril low and intermediate level waste disposal centre.

The plant Vandellós I has an installation prepared in the reactor building pit for the temporary storage of low and intermediate level wastes generated during the dismantling process as a specific intermediate solution for the inventory of wastes that cannot be managed at the El Cabril facility.

The Juzbado fuel manufacturing facility has installations similar to those of the nuclear power plants, consisting of a treatment plant for liquid wastes, based on desiccation and immobilisation in cement, and other installations for the pre-

conditioning of solid wastes by pre-compacting or their final conditioning by immobilisation in cement. As in the case of the nuclear power plants, the temporary storage facility is used as an intermediate step prior to the transport of the wastes to the El Cabril low and intermediate level waste disposal centre.

The CIEMAT processing and temporary storage installations IR-17 is authorised as a 2nd category radioactive facility and consists of three buildings: the conditioning sheds building (CIEMAT Building 33), the package store (Building 40) and the packaging and components manufacturing workshop (Building 41).

In accordance with its operating permit, the IR-17 facility may be used for the conditioning of low and intermediate level solid wastes produced by CIEMAT or managed by ENRESA. The permit also establishes that the materials that may be handled or stored are solid wastes belonging to IAEA categories 1 and 2 and encapsulated sources of categories 1, 2 and 3 (whose surface dose rate does not exceed 1Sv/h for maximum energies of 1.33 MeV) and 4. The facility may also receive and store sources of Ra-226 taken over by the Directorate General of Energy Policy and Mines of the MITYC.

The facility is also equipped with the systems required for the disassembly of radioactive lightning rod and ISD ion sources for subsequent conditioning. The CIEMAT also treats and conditions the secondary wastes arising from research activities carried out at the centre, relating mainly to radioactive waste characterisation methodology developments.

The disposal facility El Cabril can store low and intermediate-level waste. Recently, a disposal facility for very low-level waste has been added, reducing the storage costs [Redondo, 2006]. The El Cabril centre has solid and liquid waste treatment and conditioning systems, including an incinerator and a compactor. These systems are used to suitably treat and condition all the wastes from the minor producers, as well as those generated at the facility itself, prior to their being introduced in the cells. It also possesses the systems required for the final conditioning of wastes from nuclear facilities, prior to their disposal in the cells. There are two sets of installations used for the temporary storage of solid waste and installations for definitive disposal."

In the future, the construction of a centralised interim storage facility is envisaged, scheduled for the year 2010. The urgent need for such a facility is due to several factors. On the one hand, waste from the reprocessing of Vandellós I fuel, which was sent to France, and minor quantities of fissionable materials recovered during the process of reprocessing the spent fuel from the Santa María de Garoña nuclear power plant, sent to United Kingdom prior to 1983, shall return to Spain respectively after 2010 and 2008. On the other hand, the dismantling of José Cabrera as from 2009 will make additional storage capacity necessary. With respect to the Centralised Temporary/Interim Storage Facility, in December 2004 the Parliament urged the Government to collaborate with ENRESA in developing the criteria required for construction to begin, as well as to undertake whatever reforms and updates to the

PGRR might be necessary for this purpose.³² The Centralised Temporary/Interim Storage Facility is planned to operate for approximately 60 years [ENRESA, 2006].³³

For the calculation of costs, ENRESA assumes that by 2050 a facility for definitive disposal will be available [Gonzales/Espejo, 2006]. The different PGRRs have contemplated disposal of high level waste and long-lived waste in deep geological formations. The fifth PGRR postpones any decision regarding the definitive disposal until 2010. In the meantime, research should be continued to facilitate the decision making process by 2010. ENRESA's short-term activities are aimed at drawing up reports on different aspects of the management options, from their social and legal aspects to technical studies on geological disposal or on technologies such as partitioning and transmutation [Spanish Government, 2005].

The RD 5/2005, on Urgent Reforms to Promote Productivity and Improve Public Contracting established further regulations concerning the treatment of radioactive waste. It states that the state will become the owner of the radioactive wastes once they have been sent for definitive disposal and that the state will be responsible for whatever surveillance might occur following the decommissioning of a nuclear or radioactive facility, once the period of time established in the corresponding Statement of Closure has elapsed.³⁴

2.3 Responsibilities for decommissioning costs and the management of decommissioning activities

With regard to decommissioning costs and the management of decommissioning activities, a clear distinction has to be made between nuclear installations that are financed by the fund that is managed by ENRESA and those that are financed by the owners of the facilities (see below). The fund managed by ENRESA is not only dedicated to the financing of decommissioning activities. All activities stated in the PGRR are included (see ENRESA's responsibilities above). These are updated every four years or, at the request of the Industry Ministry, at any other point in time.

The decommissioning cost of all nuclear power plants in Spain are covered by the financial resources of the fund. No time restriction, as in the case of uranium mines and mills, is made. ENRESA is directly responsible for the management of decommissioning activities. The contributions to the fund are defined by Royal Decree.³⁵

³² Ref. to the Ninth Resolution Proposal in the presentation of the General Report on CSN activities before the Lower House of the Spanish Parliament on 22 December 2004, published in the Official Gazette of Congress on 30 December 2004 (Series D, Number 132, pp. 29 and following.).

³³ For a more detailed description of the plans for the centralised interim storage facility please see ENRESA, 2006, p. 18f.

³⁴ RD 5/2005, Art. 25, para. 9.

³⁵ See chapter 3.

With respect to uranium mills and mines the owner of each facility, i.e. ENUSA, is responsible for decommissioning costs and the management of decommissioning activities [Romero, 2006]. Nonetheless, there are exceptions made by the authorities in case of relatively old facilities that have been in use before ENRESA was founded in 1984 and belonged to the former Junta de Energía Nuclear. In these cases, ENRESA is responsible for the decommissioning costs and for the management of decommissioning and therefore all related costs are covered by the fund that is managed by ENRESA [Gonzales/Espejo, 2006]. All facilities that started operating after 1984 are financed by ENUSA. If a uranium mine or a uranium mill operated before and after 1984 the respective share of financing has to be determined by a contract between ENUSA and ENRESA, which has to be approved by the MITYC [Romero, 2006].

The fuel manufacturing facility Juzbado is owned and managed by ENUSA and this public sector company is also responsible for the management of the future decommissioning activities. However, the financing of those activities is ensured by periodical contributions to the fund managed by ENRESA during the period of operation. The responsibilities and contributions to the fund are stated in the respective contract [ENRESA, 2006].

The decommissioning of nuclear installation owned and managed by the CIEMAT will have to be financed by the owner, continuing the cooperation in terms of technical support by ENRESA [ENRESA, 2006]. ENRESA only finances the decommissioning activities for nuclear waste of the CIEMAT, which was directly related to the production of electricity from nuclear sources [Días/Lopez, 2006].

In the case of the two already dismantled research reactors Arbi (Bilbao) and Argos (Barcelona), the owners were responsible for the decommissioning costs and the managing of decommissioning activities [Porro, 2006]. For the dismantling of Arbi ENRESA was contracted to carry out the activities but Labein, the owner, was responsible for the decommissioning activities and for the respective costs.

2.4 Cost estimates for decommissioning activities

In general, the accessible information for detailed cost estimates for decommissioning of specific facilities is very limited. The only publicly accessible documents are the PGRR and the legal documents regulating the financing schemes. The other information had to be gathered by personal communication, but remained extremely scarce.

The PGRR includes an overview of all the economic and financial aspects that are covered by the fund that is managed by ENRESA.³⁶ The fifth PGRR from 1999 states the mayor assumptions for calculating future decommissioning costs, i.e. an estimated

³⁶ Consejo de Ministros (2006), pp. 35-41 and Miner (1999), pp. 41-47.

inflation rate of 2% per annum, a 2,5% discount rate³⁷, 3% annual increase of electricity demand and a 40 year lifetime for nuclear power plants.³⁸ In addition, cost estimates are based on reference cases as far as experience was already gained from anterior projects [Miner, 1999, p. 42]. The estimates for deep geological disposal are based on the conceptual engineering project carried out by ENRESA and all other concepts are based on its own estimates [Miner, 1999]. For the decommissioning of the nuclear power plants, studies by ENRESA provided the basis and were compared with calculations made in other countries or by international organizations [Miner, 1999].

Furthermore, the fifth PGRR lists the estimated total cost for all decommissioning activities, which shall be carried out under the fund managed by ENRESA. For the period 2000-2070 total costs of around 8 billion Euro (1999)³⁹ are estimated [Miner, 1999]. The draft sixth PGRR estimates future costs at 9.88 billion Euro (6.561 billion Euro discounted) [ENRESA 2006]. These total costs are subdivided into different sections, including structural costs, R&D, transport, storage of low and intermediate level waste, temporary storage and final disposal of spent fuel and high-level waste, closure/decommissioning of nuclear power plants and "other" installations, management of special wastes, emergency system operation. In addition, the payments to the stockholders of ENRESA are published, which are based on a yearly adjusted percentage on the share capital. The following figure shows at what point in time the above mentioned cost are expected to arise. No calculations for individual installations are published.

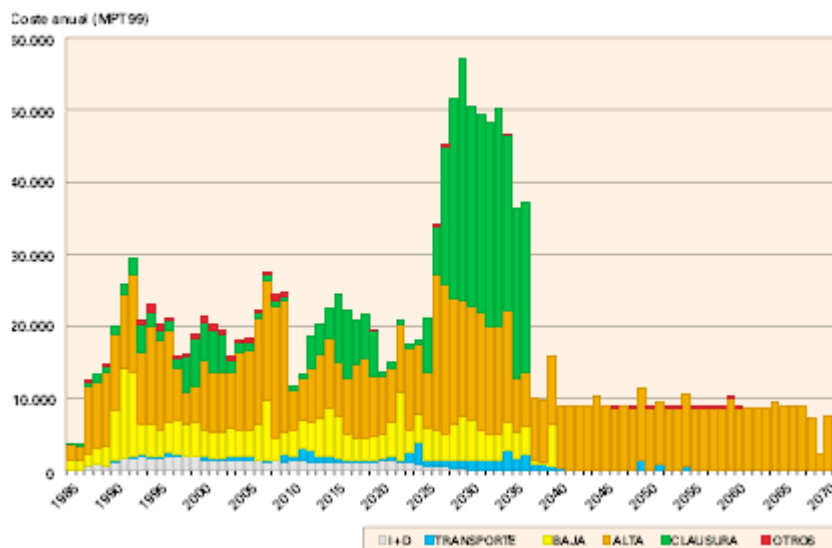
³⁷ Today, the discount rate applied for cost calculations is 1,5% [Gonzales/Espejo, 2006].

³⁸ Further assumptions were made but they are not relevant any more for the present financing scheme. See [Miner, 1999, p. 41f].

³⁹ 1.331 MPT99

Figure 1: Distribution of costs over time for all major fields of activities (in thousands of Spanish pesos)

Figura 6.1. Distribución de costes en el tiempo por grandes conceptos.



Notes:

- Gray: R&D (I+D);
- Blue: transport (transporte);
- Yellow: low level waste (baja);
- Orange: high level waste (alta);
- Green: closure/decommissioning (clausura);
- Red: other costs (otros)

The sixth PGRR, which was approved by the Council of Ministers on 23 June 2006, includes similar information. In general, the calculations are divided into two periods: the past period from 1985 until 2006 and the future period from 2007 until 2070. The value of the ENRESA fund accumulated up to 2006 is of 1.835 billion Euro. The future costs, estimates that are based on “the best data available at the moment” [Consejo de Ministros, 2006], are divided into the six major fields of activities, i.e. low and intermediate level waste, spent fuel and high level waste, closure/decommissioning of installations, R&D, structural costs and other activities. The total estimated cost of about 13 billion Euro (2006) for the entire period between 1985 to 2070 is distributed to the above mentioned fields of activities as follows (see also cheese graph on the left in figure 2 hereunder)⁴⁰:

- Low and intermediate level waste: 12,5%
- Spent fuel and high level waste: 47,9%
- Closure/decommissioning: 20,1%
- R&D: 2,8%
- Structural costs: 16,3%

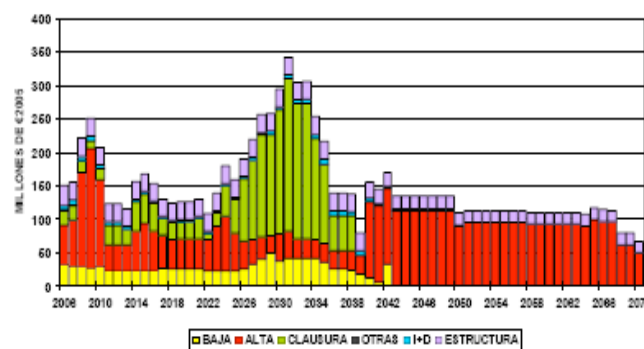
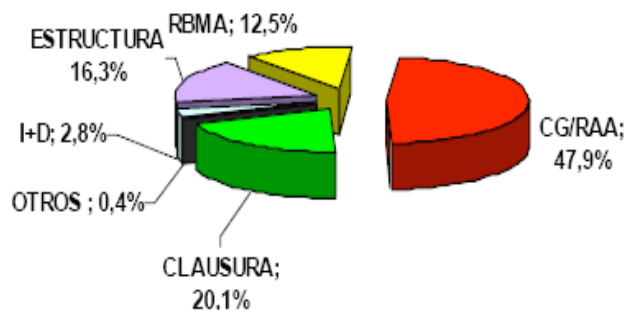
⁴⁰ Note that the previously indicated lower figures cover only future costs from 2006 onwards while the € 13 billion cover past and future costs.

It is stated that by 2005 about 25% of the overall costs had been incurred mostly for the treatment of spent fuel and high-level waste (see Annex IV). The expected timeframe for payments is given in a graph as in the fifth PGRR (see hereunder).

Figure 2: Cost for nuclear waste management [Consejo de Ministros, 2006, p. 37]

COSTE DE LA GESTIÓN

✓ Coste total estimado ≈ 13.000 M€06 (1985-2070)



✓ Incurrido el 25% del total a finales de 2005

FIGURA 14. COSTES DE LA GESTIÓN POR GRANDES CONCEPTOS

Notes pertaining to the right figure above:

- Lila: structural costs (Estructura)
- Blue: R&D (I+D)
- Red: high-level waste (alta)
- Yellow: low level waste (baja)
- Green: closure/decommissioning (clausura)
- Black: other costs (otros)

In the annex of the sixth PGRR, the costs for the above mentioned fields of activities are further specified (see Annex II). Nonetheless, again there are no figures for each individual nuclear installation available.

ENRESA representatives were asked whether further information would be available for the purpose of this report but the answer was that only the information given in the PGRRs would be accessible [Gonzales/Gomez, 2006].⁴¹ According to ENRESA's

⁴¹ "La única información disponible es la del PGRR." [Gonzales/Espejo, 2006] In addition, the information for table 3 was given. All other information required for all other tables were considered confidential and not accessible ("son informaciones confidenciales y no disponible").

Espejo the cost estimates are based on internal ENRESA studies and would be only communicated to power plant owners and the MITYC [Gonzales/Gomez, 2006]. Internally, reference studies are carried out both for the different reactor lines in Spain (PWR and BWR) and for each power plant and the fuel manufacturing facility Juzbado. Those studies are carried out by ENRESA's planning department. However, that information is considered confidential.

With regard to the methodology for cost calculations for different decommissioning stages and types of decommissioning activities, ENRESA's Gonzales explained that this type of question would have been appropriate a decade ago. By now the methodology would have advanced so much that the question would not be applicable.⁴²

Information on specific cost estimates for waste management, dismantling and clean-up at uranium mines and mills managed by ENRESA is even more limited. The PGRR does not specifically cover the financial aspects of the decommissioning of uranium mines and mills. In the fifth PGRR, the activities carried out with the financial resources of the fund that is managed by ENRESA are part of the section "decommissioning of other installation". This section includes "the remediation of uranium mines, the decommissioning of the uranium mill Andujar, the La Haba uranium mine, the decommissioning of research reactors and the adaptation and improvement of various CIEMAT installations" [Miner, 1999]. Any information about the costs in absolute values were considered confidential by ENRESA [Gonzales/Gomez, 2006]. Economic information about the decommissioning costs of uranium mines and mills was only given by the representative of ENUSA.

Responsibilities, supervision, methodology and accessibility of cost calculations

ENRESA's Planning Department,⁴³ in cooperation with the Technical Departments, is responsible for cost calculations.⁴⁴ Under RD 1349/2003 ENRESA is obliged to carry out certain studies and submit them to MITYC.⁴⁵ Firstly, every four years, or whenever MITYC requires it, a revision of the PGRR, including the economic and financial measures taken to comply with the necessary activities and technical solutions to be carried out during the timeframe of the plan.⁴⁶ Secondly, during the first six months of

Since MITYC has access to the same information, the Ministry representative was contacted again via e-mail, asking whether the Ministry could provide the information required. The answer was that if ENRESA does not want to provide the required information they would have their reasons for doing so and that the MITYC would consequently not make them available either [Redondo, 2006a].

⁴² "Una pregunta para un estado inferior." Mr. Gonzales stated that after 20 years of experience the cost calculation would be very accurate and that it would be an advantage to deal with nine nuclear power plants to gather the necessary information. [See Gonzales/Espejo, 2006]

⁴³ Departamento de Planificación

⁴⁴ Departamentos técnicos

⁴⁵ RD 1349/2003, Art. 6.

⁴⁶ RD 1349/2003, Art. 6a.

each year, a report including the technical and economic aspects of activities performed during the previous year and a comparison with the corresponding budget. In addition, an updated economic-financial study of the cost of the activities is requested.⁴⁷ Thirdly, prior to 30 November of each year, a technical-economic justification of the suitability of the annual budget corresponding to the following year must be submitted, as well as its projection for the three subsequent years, with respect to the contents of the updated economic-financial study of the cost of activities.⁴⁸ However, only the PGRR is accessible to the public.

No defined algorithms or generally excepted cost calculation and modelling software is used by ENRESA nor by any other institution in the field of nuclear energy in Spain. With regards to the reference cases for cost calculation, the ENRESA representative pointed out that the already performed decommissioning activities in the case of Vandellós I are taken to adjust the cost estimates for the other reactors [Gonzales/Espejo, 2006]. Besides, the internal studies for the decommissioning activities of the types BWR and PWR can be seen as reference cases.

Relevant written information about ENUSA's uranium mills and mines was not available and could only be gathered via personal communication.⁴⁹ Each facility director calculates decommissioning costs in cooperation with ENUSA's economic and financial department [Romero, 2006]. There is no periodical external supervision of the cost estimates. Nevertheless, the owner of all types of mines in Spain are obliged under RD 2994/1982 to present a Restoration Plan⁵⁰ to MITYC or to the responsible local authority,⁵¹ which has to include the timeframe and the estimated costs for remediation activities.⁵² Therefore, the estimates have to be presented but they are not periodically controlled [Romero, 2006]. This information is not publicly available [Romero, 2006].

Cost estimates are based on the cumulated experience gathered since 1991. Furthermore, it was stressed that calculations would be really simple and that, for example for the movement of soil, a market price is available to compare costs. No algorithms or special software would be necessary to calculate the cost for the decommissioning of uranium mines and mills [Romero, 2006]. The major cost components for the decommissioning uranium mines are the movement of soil and the treatment of water. In the case of uranium mills general dismantling activities are the major cost driver [Romero, 2006]. There are no separate accounts for provisions made for decommissioning activities, so it cannot be established how the estimates are

⁴⁷ RD 1349/2003, Art. 6b.

⁴⁸ RD 1349/2003, Art. 6c.

⁴⁹ The information decommissioning costs is included in the respective tables.

⁵⁰ Span. Plan de Restauración

⁵¹ In the case of uranium mines the Jefatura de Minas in the respective Comunidad Autónoma is in charge, in the case of uranium mills the MITYC is responsible [Romero, 2006].

⁵² RD 2994/1982, Art. 3, para. 3.

calculated in accounting terms. They are simply part of the overall financial resources of ENUSA.

In the case of the research reactor ARBI, no written information regarding cost estimates is publicly available. Some information could be gathered via personal communication. The final cost for decommissioning the research reactor amounted to approximately 0,3 million Euro,⁵³ including all decommissioning activities and the withdrawal of spent fuel [Porro, 2006]. The previous cost estimates were based on the experience of the already decommissioned research reactor Argos of the same type. Therefore, the cost estimates were rather precise. The main cost driver were the actual dismantling activities, making about around half of the total costs. The cost estimates were not verified by any public authority [Porro, 2006]. The representative of Labein underlined that activities that are taken out in only 5 months do not need much cost estimates. The costs were entirely covered by Labein's budget of 2004. No fund to cover the cost was set up.

⁵³ The exact sum can be seen in the tables.

2.4 Future decommissioning strategies

RD Law 24/2005, of 18 November 2005,⁵⁴ foresees the transformation of ENRESA into a Public Business Entity (EPE).⁵⁵ Even though this does not imply any changes regarding the technical aspects of decommissioning activities [Gonzales/Espejo, 2006], the financing mechanisms for the fund managed by ENRESA will change.⁵⁶ The costs of the activities carried out by ENRESA will be covered by a system of fees for each type of service.

The reason for this change of the legal status of ENRESA is that the state wants to assume responsibility for an essential public service such as the management of radioactive waste, including the spent fuel from the nuclear power plants and the decommissioning of nuclear facilities [Redondo, 2006]. The transformation of ENRESA into a Public Entity Company will come into force by Royal Decree. Until then the provisions of the RD 1349/2003 are legally binding.⁵⁷ For the changes of the administrative organization scheme implied in the change of ENRESA's legal status, please see Annex V.

The sixth General Radioactive Waste Plan (PGRR) includes a section where the expected years for each decommissioning stage are stated with regards to all nuclear power plants, the fuel manufacturing facility of Juzbado and for the already existing and planned storage facilities (see Annex I).

⁵⁴ Law 24/2005, Art. 8.

⁵⁵ Entidad Pública Empresarial

⁵⁶ See Law 24/2005, Art 17 and 18.

⁵⁷ See Law 24/2005, Art 21.

Table 2 Expected total costs of future decommissioning of nuclear installations in Spain (in prices of 2004)

Short name of nuclear facility	Kind of facility: NPP = nuclear power plant	Years decommissioning activities are expected to take place	Total decommissioning costs estimated [Mio. Euro]	Annuity of estimated decommissioning costs in relation to output over lifetime	Remarks
Saelices el Chico (Salamanca) – Planta Quercus	U mill	2008	4.6 Mio	---	(2) The estimated decommissioning costs are discounted to the year the activities shall take place. Overnight costs were not available.
Saelices el Chico (Salamanca) – La mina	U mine	2004-2008	58.7 Mio	---	(2) The estimated decommissioning costs are discounted to the year the activities shall take place. Overnight costs were not available.
Vandellos 1	NPP	2030–2037 (Stage 3)	224.3 Mio	ENRESA pointed out that this column was not applicable, since the estimates are made globally and not individually for each NPP.	(1) No information was given regarding the interest rates.
José Cabrera	NPP	2006-2009 (removal of SF) 2009-2016 (Stage 3)	11.2 Mio 119.6 Mio.		(1)
Ascó I	NPP	2023-2025 (removal of SF) 2027–2034 (Stage 3)	14 Mio 192.5 Mio		(1)

Source:

(1) All information was given by ENRESA representatives during the interview [Gonzales/Espejo, 2006].

(2) Romero, 2006

3. Funds and fund management

In this chapter, the analysis will focus on the fund that is managed by ENRESA (hereafter the Fund). The so called Restoration Funds, which have to be set up in the case of mining activities in Spain, are considered less important with respect to the purpose of this report and will consequently not be subject to specific investigation. Other facilities that are subject to analysis in this report, like research reactors, are not decommissioned with the financial resources of earmarked funds.

ENRESA underlined that there are no separate accounts for decommissioning activities. The Fund is used for all activities mentioned in the PGRR. [Gonzales/Espejo, 2006].

3.1 Setting aside funds

The Fund is managed by ENRESA. At the moment, the sources for contributions to the Fund are regulated under RD 1349/2003⁵⁸ and RD Law 5/2005, which have modified the financing system for spent fuel and radioactive waste from nuclear power plants. The legal provisions for the financing of the Fund are summed up and slightly modified in the RD Law 24/2005, which will come into force this year.

Four major channels of income plus the financial yield generated by them provide the financial resources for the Fund.

First, the major part of the fund is collected by the way of tariffs on supply to end clients and access tariffs, resulting from the application of percentages on the electricity sales price. The electricity price and the percentage for decommissioning costs are established by the MITYC on an annual basis. These percentages are included in the Royal Decree establishing the electricity tariff for each year [Colenco/Iberdrola, 2005⁵⁹ For the year 2006, the ordinary electricity consumer has to pay a charge of 0,210% on the electricity bill. Qualified and business costumers have to pay a charge of 0,601%.⁶⁰ The income from this channel is used to finance the decommissioning activities of nuclear power plants at any time in the present or in the future, which can be related to the operational period before the 1 April 2005. Moreover, all costs for management of nuclear waste that can be related to the activities taken on by MITYC that are directly connected to nuclear energy production have to be covered. Finally, all activities related to the decommissioning activities of mines prior to 1984 are included [ENRESA, 2006].

⁵⁸ RD 1349/2003, Art. 7.

⁵⁹ For the year 2006 the RD 1556/2005 is in place.

⁶⁰ See RD 1556/2005, Art. 3.

Second, the RD Law 5/2005 introduced the polluter-pays-principle with regards to the licensees of nuclear power plants. As from 1 April 2005, the owners of the nuclear power plant have to transfer their contributions to the Fund in relation to the gross kilowatt-hours generated by each plant multiplied by a unit value specific to each plant. These values are fixed by MITYC and possibly revised every year by RD on the basis of an updated technical-economic report on the corresponding costs. The tariffs for the year 2006 are also stated in the RD 1556/2005.⁶¹ The income via this channel is meant for the decommissioning activities at any time in the present or in the future related to the period after 1 April 2005.⁶² The licensees are charged on a monthly basis [Colenco/Iberdrola, 2005]. In case that the estimates for future decommissioning costs vary this source of income will also be modified on an annual basis by RD. The sixth PGRR includes the following graph regarding the expected income from the different nuclear power plants [Consejo de Ministros, 2006, p. 40].

Figure 3: Provisions from all operating nuclear power plants (in million euros)

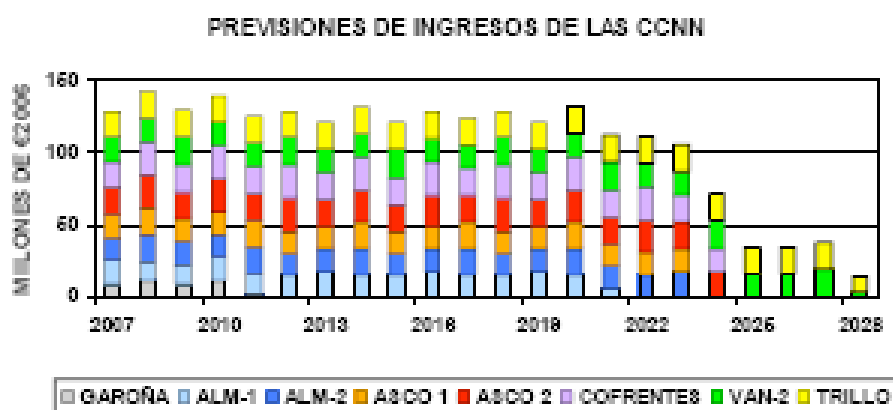


FIGURA 16. INGRESOS VÍA CENTRALES NUCLEARES

Third, the revenue related to the fuel manufacturing facility Juzabdo. In this case, annual payments are made to the Fund.⁶³ With the coming into force of the RD Law 24/2005 the income will be directly related to the weight of the decommissioned material.⁶⁴ Similar to the payments of the nuclear power plants, the amounts collected

⁶¹ In RD 1556/2005, additional regulation 12, the following tariffs are established for each reactor (per gross kWh). José Cabrera: 0,248 cent/kWh. Santa M. De Garoña: 0,252 cent/kWh. Almaraz: 0,214 cent/kWh. Ascó I: 0,214 cent/kWh. Almaraz II: 0,214 cent/kWh. Confrontes: 0,235 cent/kWh. Ascó II: 0,214 cent/kWh. Vandellós II: 0,214 cent/kWh. Trillo: 0,214 cent/kWh.

⁶² For a more detailed description of the corresponding activities, see ENRESA, 2006, p. D14.

⁶³ See RD 1349/2003, Art. 7, para. 1b.

⁶⁴ RD Law 24/2005, Art. 8, para. 3e.

shall be sufficient for the management of the nuclear waste and the corresponding decommissioning activities.

Fourth, the withdrawal of radioactive waste in the field of medicine, industry, agriculture and research is charged directly to the producer through fixed tariffs for the various types of waste. Those tariffs have to be approved by the MITYC.⁶⁵

The RD 1349/2003 states that any other channel of revenue not contemplated above can contribute to the financial resource of the Fund.⁶⁶ This statement is not included in the RD Law 24/2005. In special circumstances, for example in the case of “orphan” nuclear waste, the financial resources obtained by the quota on the electricity tariff can be used for the management of those materials.⁶⁷

In the case of the Restoration Funds managed by ENUSA for the decommissioning of uranium mills and mines, the estimated costs are taken into account internally in the annual balance sheet. Every year the estimates are revised and, if necessary, adjustments are made by the department of Finance and Economics [Romero, 2006]. The corresponding RD does not exactly state to what extent accruals have to be set up. The requirement for a Restoration Fund concerns all mining activities in Spain and is no special prerequisite for uranium mining.

For the research reactor Arbi in the surroundings of Bilbao no special fund was established. No specific legislation applied for the decommissioning of this reactor and the total cost of around 300.000 Euro was paid in the year the decommissioning activities took place.

The RD 1836/1999 on the Regulation of Nuclear and Radioactive Facilities states that to obtain the Provisional Operational Authorisation for a nuclear facility a forecast of the decommissioning and dismantling activities has to be submitted. This should include a cost study and the economic and financial provisions to guarantee decommissioning [Colenco/Iberdrola, 2005].⁶⁸ Nevertheless, no Provisional Operational Authorisation was granted since 1999 and therefore this legal provision has no effect on nuclear installations currently in operation [Gonzales/Espejo].

Considering the different channels of income of the Fund described above, it is logical that the collection of the financial means from each facility ends before the shut down of the plant [Colenco/Iberdrola, 2005].

With regards to uranium mines, the RD 2994/1982 established that the Restoration Plan including the preview of the estimated costs has to be submitted to the corresponding authority before the authorisation of exploitation is given.⁶⁹ The financial means have to be available at the time of closure [Romero, 2006].

⁶⁵ The future tariffs are included in the RD Law 24/2005, Art. 8, para. 4e.

⁶⁶ RD 1349/2003, Art. 7, para. 1d.

⁶⁷ See RD/2003, Art. 9.

⁶⁸ See RD 1836/1999, Art. 20f.

⁶⁹ See RD 2994/1982, Art. 2.

The provisions made by ENRESA for the Fund do not include all cost items mentioned in table 2. Facility shut down and pre-decommissioning activities are not included in the case of nuclear power plants. With regard to decommissioning of nuclear power plants, the responsibility of ENRESA starts only three years after the shut down of the plant, i.e. after the removal of the spent fuel [Gonzales/Espejo, 2005]. Until ENRESA takes over responsibility, the plant owner remains responsible for all pre-decommissioning activities. In the first three years after shut down the spent fuel management has to be financed by the producer as long as the spent fuel is handled at the nuclear power plant site. The costs are only covered by the Fund as soon as ENRESA takes responsibility of it for the transport to interim storage facilities. Consequently, the storage of the spent fuel in the pools of the nuclear power plants has to be financed by the owner. The same distinction is made for other radioactive waste.

In the case of the fuel manufacturing facility Juzbado and the old uranium mill and mines all costs have to be covered by the Fund.

The Fund shall also cover all costs stemming from the management of other radioactive wastes from the operation of nuclear power plants, dismantling and decontamination activities, decommissioning waste management, decommissioning of non-radioactive parts and site restoration. Employment and regional development support programmes are financed by the facility owner [Gonzales/Espejo, 2006].

In Spain, there are no legal provisions stipulating the methodology for the establishment and the management of funds. However, ENRESA cooperates closely with various international organisations, in particular the OECD/NEA. In the realms of those working groups some methodologies were established and are taken into account implicitly [Gonzales/Espejo, 2006].

The accruals of the Fund are based on discounted decommissioning costs. The MITYC decides independently which kind of discount rate should be used for calculations and updates the decision every year. While the fifth PGRR stated that a discount of 2.5% was to be used, this figure was modified following the annual economic-financial study and the current discount rate is 1.5% [Gonzales/Espejo, 2006]. The change was considered necessary by the MITYC to appropriately mirror the reality on the financing market.

In the case of ENUSA, the Restoration Fund is established by annual contribution. The financial resources are discounted with the consumer price index (IPC) until they are used for decommissioning activities [Romero, 2006a].

As stated above, contributions to the Fund are regulated by Royal Decree and modifications are possible on an annual basis. The reports drawn up by ENRESA and submitted to the MITYC every year⁷⁰ are supposed to include the necessary economic and financial information to adjust the payments via the channels of income discussed above. Consequently, the tariffs on supply to end clients and access tariffs will be increased if the estimated decommissioning costs for all activities related to the period

⁷⁰ See chapter 2.

before the 1 April 2005 should not be sufficient. Similarly, the tariff on nuclear power plant operators will raise if decommissioning cost for all activities related to the period after 1 April 2005 should exceed the estimated costs. With regard to uranium mines and mills managed by ENUSA, the cost estimates are updated every year when the provisions are made [Romero, 2006].

3.2 Management of funds

The general concept used in Spain is that of an external, segregated fund under public control. This Fund is managed by ENRESA who has access to all financial resources [Gonzales/Espejo, 2006]. The management of the Fund is based on the principles of security, profitability and liquidity.⁷¹ The financial means of the Fund can only be invested in expenditures, labour, projects and immobilizations related to actions stated in the PGRR.⁷²

The supervision, control and assessment of transitory investments of the Fund depends on the so called Tracking and Control Committee which is directly attached to the Ministry of Finance.⁷³ The Committee is composed of high-ranking state officials from different Ministries.⁷⁴ The functions of the Committee are to set out the criteria for the composition of the assets of the Fund and the tracking of the financial investments. In addition, the Committee draws up half-yearly reports describing the situation of the Fund and the investments corresponding to its financial management and submits them to the Ministry of Finance. This report is not accessible to the public. With the coming into force of the RD Law 24/2005 the reports will be submitted to the MITYC and to the corresponding commission of the Parliament but not to the general public. The Committee meets every six months to decide about the general investment policy. ENRESA is then responsible for the execution of those decisions on a daily basis [Gonzales/Espejo, 2006].

The so-called restauration funds by ENUSA are managed internally and are not segregated. No regulations are in force regulating the management of those funds except that the financial resources have to be available when the dismantling and decommissioning activities start [Romero, 2006]. Only ENUSA has access to money that is included in the general budget and not separately set up. Therefore, the management of the fund is part of the general investment strategy of ENUSA [Romero, 2006].

The liquidity requirements are set up by the Tracking and Control Committee. Internally, there is the requirement for liquidity to cope with the tasks foreseen in the

⁷¹ RD 1349/2003 Art. 10, para. 1.

⁷² RD 1349/2003 Art. 7, para. 2.

⁷³ Under the new legislation RD Law 24/2005 it will be attached to the MITYC. See RD Law 24/2005, Art. 8, para. 9.

⁷⁴ For a detailed description of the members of the Committee see RD 2003, Art. 11, para. 1 and RD Law 24/2005, Art. 8, para. 9.

PGRR and in the annual reports [Gonzales/Espejo, 2006]. To ensure liquidity, the technical-economic justification drawn up by ENRESA and submitted to the MITYC includes a projection for the subsequent three years.

Internal control of the activities of ENRESA is guaranteed through the annual external audits, controlling the financial activities, which are summed up in the annual report.

There are several state control mechanisms. ENRESA is a public sector company and therefore all mechanisms for this type of company applies. The state can carry out its control via the Spanish Court of Audits⁷⁵ and the General Intervention of the State⁷⁶ [Gonzales/Espejo, 2006]. Furthermore, the above mentioned control organs supervise the activities of ENRESA. On the one hand, the Tracking and Control Committee is responsible for the investments of the Fund and for informing the Parliament. On the other hand, MITYC receives ENRESA's reports and therefore, a priori, has access to all relevant information in order to carry out its supervisory tasks.

There is no specific regulation that stipulates how decommissioning funds should be managed other than the general guiding principles of security, profitability and liquidity. The update of the Funds are implicitly realised by the annual reports that have to be submitted and by the periodically published PGRR.

ENUSA, like any other company in Spain, is controlled by external auditors. The representative of ENUSA stressed the fact that the control of the funds is of special importance, even though the provisions for the funds are not separately stated in the annual reports [Romero, 2006]. In addition, the state has tight control of ENUSA's activities since it is a public sector company and its stockholders, SEPI and CIEMAT, are state holdings [Romero, 2006]. There are no regulations of how the funds have to be managed. The only requirement is that the accumulated money is available at the time of closure. This requirement is not stated in a specific legal document but it is determined for each facility when the Authorization of Closure and Decommissioning⁷⁷ is granted.

The financial management of the Fund is regulated in Article 10 of RD 1349/2003, leaving the Tracking and Control Committee a wide range of options for the financial investment. These include:

- securities with fixed or variable income⁷⁸ (traded on the stock market in an organised market officially recognised and open to the public or at least to financial entities, state debts, stock mortgage market and other assents and financial instruments)
- derivatives for structuring, transformation or to cover investment operations of the portfolio investment

⁷⁵ Tribunal de Cuentas

⁷⁶ Intervención General del Estado

⁷⁷ Autorización de Desmantelamiento y Clausura

⁷⁸ Valores mobiliarios de renta fija o variable

- deposits in financial entities, credits and borrowing
- immovable assets
- foreign stocks
- any other investment activity or instrument which the Tracking and Control Committee considers adequate in compliance with the investment principles of the fund.

No specific statements regarding the actual composition of investments are made.

ENRESA does not benefit from potential good investment performance, since the final resulting balance should be zero once the entire program of radioactive waste management and dismantling of facilities under the PGRR has been carried out.⁷⁹

Indirectly, the owners of operating facilities and the electricity clients should profit from good investment performance because, *ceteris paribus*, their contributions to the Fund would decrease. However, the interest gained from good investment of the fund becomes part of the financial resource of the fund and is not accessible to the contributors of the fund. Moreover, the different operators of nuclear facilities in Spain do not have any influence on the investment decisions of the fund manager.

In the case of uranium mill and mines ENUSA's internally managed funds can only have positive or negative impact on the overall investment performance of the company because the fund is not separately managed.

In general, it is the function of the Tracking and Control Committee to secure the uniqueness of the Fund. The Fund can only be used to cover expenses, labour, projects and fixed assets deriving from the activities included in the PGRR [Colenco/Iberdrola, 2005]. The PGRR has to be approved by the Government. Only under exceptional circumstances, such as the case of orphan nuclear waste, the costs of radioactive waste management may be covered by the financial resources of the Fund and only on the basis of an explicit decision by MITYC.⁸⁰ No insurance is used to cover the financial risks inherent in the Fund management. In the case that the fund manager, i.e. ENRESA, fails in securing the value of the fund either the licencees of the still operating could be obliged to make additional payments to the fund or the state would have to intervene, considering the fact that ENRESA will soon become a Public Business Entity. Nonetheless, up to now no legally binding plans have been made for this case.

⁷⁹ RD 1349/2003, Art. 7, para. 3.

⁸⁰ RD 1349/2003, Art. 9.

3.3 Special cases: Fall-back option and transfer of ownership

The associated risk occurring in the case of early shut down of a nuclear facility was taken into account by the Royal Decree 5/2005.⁸¹ According to this law, in the event of operations ceasing prior to the period established in the PGRR for reasons beyond the will of the licensee, whatever financing deficit might exist shall be considered as a cost to be covered via the earmarked share of the electricity sales, i.e. covered by the way of tariffs on supply to end clients and access tariffs. Otherwise, the licensee shall be obliged to cover the said deficit during the three years following such ceasing of operation [Colenco/Iberdrola, 2005].

In the case of uranium mines and mills the owner of the facility is responsible according to the terms of the Restoration Plan. A fall-back option is included in the RD 1349/2003, Article 4, which defines ENRESA's responsibilities. ENRESA is responsible for the treatment of tailings from uranium mines and mills, following the instructions of the competent authorities, and considering the plans and provisions of the owner. Therefore, first of all, the operator, i.e. ENUSA is responsible for all liabilities in accordance with the corresponding Restoration Fund. And ENUSA has to cope with anticipated decommissioning cost. The ENUSA representative stressed the fact that all uranium mills and uranium mines were shut down earlier than expected [Romero, 2006]. Consequently, the provisions for the decommissioning activities had to be adjusted before. In the year when the decision for early closure was taken the stockholders of ENUSA were requested to make exceptional provisions to cope with the anticipated costs [Romero, 2006].

The sources of income of the Fund are independent of the ownership of the facility. Therefore, the transfer of ownership of facilities that are decommissioned with the financial means of the Fund should not have any effect on the liabilities.

The Fund managed by ENRESA is not especially protected in the case of insolvency of the fund manager. In the case of insolvency of the operator of a facility the general procedure foreseen in the Spanish Law of Commerce would apply. The missing payments would be considered as company debt [Gonzales/Espejo, 2006]. With the coming into force of RD Law 24/2005 contributions to the Fund will be considered as tax payments. In general, the Spanish Law states that in case of insolvency the Treasury is the first institution to be compensated [Gonzales/Espejo, 2006].

The associated risk in case of insolvency of ENUSA is relatively low, considering the fact that the major part of decommissioning activities of uranium mills and mines in Spain is already accomplished and that the facilities in Ciudad Rodrigo will be decommissioned by 2008. ENUSA's representative underlined that the money for those activities is available and that in any case ENUSA as a public sector company is protected by the state [Romero, 2006]. However, there is no known independent assessment of the uranium mining and milling clean-up and remediation operations.

⁸¹ RD Law 5/2005, Art. 25, para. 6.

Table 3 Base for decommissioning funds required

Short name of nuclear facility	Kind of facility	Decommissioning funds based on overnight / undiscounted decommissioning costs	Decommissioning funds based on net present value / discounted decommissioning costs	Discount rate used for discounting, if any	Reference date used for discounting	Remarks
Lobo (La Haba, Badajoz) Mina and Planta Lobo-G	U mines and U mill (no separate information available)	---	Yes	ENRESA: 1.5% ENUSA: Consumer price index (IPC)	Annually when the payment are made.	Decommissioning activities were partly financed by ENRESA (63%) and partly by ENUSA (37%) because the facility operated before and after 1984.(3)
Fábrica de Uranio de Andujar (FUA) (Andujar Uranium Mill-AUM)	Uranium Mill	---	Yes	1.5%	Annually when the payment are made.	(2)
Saelices el Chico (Salamanca)	Uranium Mill	---	Yes	Consumer price index (IPC)	Annually when the payment are made.	(3)
Saelices el Chico (Salamanca) – Planta Quercus	Uranium Mill	---	Yes	Consumer price index (IPC)	Annually when the payment are made.	(3)
Saelices el Chico (Salamanca) – La mina	Uranium mine	---	Yes	Consumer price index (IPC)	Annually when the payment are made.	(3)
Arbi Experimental reactor Bilbao	Research Reactor	NA	NA	NA	NA	In the case of ARBI, no fund was set up for the decommissioning activities. The total sum was paid with the company's general budget in the year the activities were carried out (2004).(1)
Vandellos 1	NPP	---	Yes	1.5%	Annually when the payment are made.	(2)
José Cabrera	NPP	---	Yes	1.5%	Annually when the payment are made.	(2)
Ascó I	NPP	---	Yes	1.5%	Annually when the payment are made.	(2)

Source: (1)Porro, 2006 (2) Gonzales/Espejo, 2006 (3) Romero, 2006

Table 4 Decommissioning funds accumulated in relation to expected total costs of future decommissioning of nuclear installations in Spain (in prices of 2004)

Short name of nuclear facility	Kind of facility: NPP = nuclear power plant	Total decommissioning costs estimated [Mio. Euro 2005]	Provisions accumulated by 31-12-2004 [Mio. Euro]	Provisions accumulated in relation to expected costs [%]	Years of operation until 31-12-2004 in relation to total expected lifetime [%]	Remarks
Lobo (La Haba, Badajoz), Mina and Planta Lobo-G	Mine and Mill (no separated costs available)	8,4	NA	100%	100%	NA - Decommissioning activities ended in 1997. (1)
Fábrica de Uranio de Andujar (FUA) (Andujar Uranium Mill-AUM)	Uranium Mill	---	---	---	100%	ENRESA considers that it not appropriate to consider provisions per facility. ENRESA is calculating with "global costs". (2)
Saelices el Chico (Salamanca) Planta Elefante	Uranium Mill	5,5	---	---	---	NA - Decommissioning activities ended in 1997. (1)
Saelices el Chico (Salamanca) – Planta Quercus	Uranium Mill	4,6	---	---	---	In addition, no prices of 2004 were available. (1)
Saelices el Chico (Salamanca) – La mina	Uranium mine	58,7	---	---	---	In addition, no prices of 2004 were available. (1)
Arbi Experimental Reactor Bilbao	Research Reactor	NA	NA	NA	100%	See above. (3)
Vandellos 1	NPP	---	---	---	100%	ENRESA considers that it not appropriate to consider provisions per facility. ENRESA is calculating with "global costs". (2)
José Cabrera	NPP	---	---	---	100%	
Ascó I	NPP	---	---	---	---	

Source:

(1) Romero, 2006

(2) Gonzales/Espejo, 2006

(3) Porro, 2006

Table 5 Management of decommissioning funds in Spain

Short name of nuclear facility	Kind of facility: NPP = nuclear power plant RR = Research reactors Others: please specify	Provisions accumulated by 31-12-2004 [Mio. Euro]	... of which has been accumulated within the own assets of the operator of the facility or its mother company [Mio. Euro]	... of which has been accumulated by the operator of the facility or its mother company within a separated account / segregated fund [Mio. Euro]	... of which has been accumulated in an external fund under public control [Mio. Euro]	... of which has been accumulated in an external fund under mixed private-public control [Mio. Euro]	Share of funds the operator of the facility can access for other activities until the funds are needed for their original decommissioning purpose [%]	Remarks
Lobo (La Haba, Badajoz) Mina and Planta Lobo-G	Mine and Mill	Already decommissioned	---	---	---	---	---	Decommissioning costs financed by ENRESA's major fund (63% external fund under public control) and by ENUSA (37% within the own assets of the operator).
Fábrica de Uranio de Andujar (FUA) (Andujar Uranium Mill-AUM)	Uranium Mill	Already decommissioned	---	---	All	---	All because ENRESA was operator and is fund manager.	(1)
Saelices el Chico (Salamanca) Planta elefante	Uranium Mill	Already decommissioned	All	---	---	---	All	(2)

Saelices el Chico (Salamanca) – Planta Quercus	Uranium Mill	NA – no separate account	All	---	---	---	All	(2)
Saelices el Chico (Salamanca) – La mina	Uranium mine	NA – no separate account	All	---	---	---	All	(2)
Arbi Experimental reactor Bilbao	Research Reactor	Already decommissioned	NA	NA	NA	NA	NA	See above. (3)
Vandellos 1	NPP	(1)	---	---	100%	---	0%	(1)
José Cabrera	NPP	(1)	---	---	100%	---	0%	(1)
Ascó I	NPP	(1)	---	---	100%	---	0%	(1)

Source:

- (1) Lacking informations were considered confidential by ENRESA [Gonzales/Espejo, 2006].
- (2) Romero, 2006
- (3) Porro, 2006

Table 6 Investment of decommissioning funds until they are used for their original purpose

Short name of nuclear facility	Kind of facility	Provisions accumulated by 31-12-2004 [Mio. Euro]	... of which have been invested in secure state bonds [Mio. Euro]	... of which have been invested in other assets with fixed interest rates	... of which have been lent to associated or joined companies or to third parties	... of which have been invested in other means	Interest on invested financial means from decom.funds in 2004 [%]	Interest on invested financial means from decommissioning funds in period 2000-2004 [%]	Remarks
Lobo (La Haba, Badajoz)	Mine and Mill	Already decommissioned	---	---	---	---	---	---	(2)
Fábrica de Uranio de Andujar (FUA) (Andujar Uranium Mill-AUM)	Uranium Mill	---	---	---	---	---	---	---	(1)
Saelices el Chico (Salamanca) Planta Elefante	Uranium Mill	Already decommissioned	---	---	---	---	---	---	(2)
Saelices el Chico (Salamanca) – Planta Quercus	Uranium Mill	NA – no separate account	---	---	---	---	---	---	(2)
Saelices el Chico (Salamanca) – La mina	Uranium mine	NA – no separate account	---	---	---	---	---	---	(2)
Arbi Experimental reactor Bilbao	Research Reactor	NA	NA	NA	NA	NA	NA	NA	See above.
Vandellos 1	NPP	---	---	---	---	---	---	---	(1)
José Cabrera	NPP	---	---	---	---	---	---	---	(1)
Ascó I	NPP	---	---	---	---	---	---	---	(1)

Sources and Notes: (1) Remark ENRESA: We have never undertaken a single investment for only one nuclear power plant. The investment we do is for the whole fund. Therefore this table is not applicable. (2) Romero, 2006 (3) Porro, 2006

4. Transparency of the funding schemes to the public

The main source of public information regarding decommissioning activities in Spain is the PGRR which is updated every four years or when the MITYC requires it. Through the PGRR the Government establishes the general framework of the national policy on the management of radioactive waste and spent fuel [Spanish Government, 2005]. Only this plan is accessible to the public. Currently, no particular changes are envisaged in the foreseeable future.

The fifth PGRR of 1999, which was replaced by the sixth PGRR in June 2006, is divided into 6 chapters. After an introductory part and the description of the radioactive waste generation in Spain (Chapter 1 and 2) the management of low and intermediate level and high-level waste are described. Chapter 5 of the PGRR states the activities with regards to the decommissioning of nuclear facilities, focussing on the decommissioning of Vandellós I and the other nuclear power plants. There is a subsection regarding the decommissioning of other installation. This section refers to those uranium mines and mills that were or will be decommissioned by ENRESA, rather than by ENUSA, for historic reasons (because they were in operation before 1984 and formerly belonged to JEN).

In general, the main steps of decommissioning activities are presented without offering detailed information to the public.

Information about all the activities carried out by ENRESA are given on the wide-ranging homepage of ENRESA⁸² and in three information offices centred in Madrid, in El Caril and Vandellós I [Gonzales/Espejo, 2006]. In addition, ENRESA organizes seminars for journalists [Redondo, 2006].

Not all decommissioning activities in Spain are taken on by ENRESA and not all are entirely financed by the Fund. No information is available on ENUSA's decommissioning activities. Information on the future decommissioning activities of the uranium mill at Sealices el Chico is only communicated to the MITYC and to the stakeholders [Romero, 2006]. The reference made to this activity in the sixth PGRR is simply that ENRESA is going to participate in the activities carried out by the owner, offering the formerly accumulated experience [ENRESA, 2006, p.27].

In the case of decommissioning activities of the research reactor ARBI in Bilbao, no specific information was provided to the public. Only regional and local authorities were informed [Porro, 2006]. The fifth PGRR states that decommissioning activities of research reactors ARBI and Argos will take place but without providing any further information.

The financial and economic aspects of decommissioning activities are exposed in the last chapter of the fifth PGRR. The description is focused on the decommissioning costs of nuclear power plants, including a graph showing the estimated costs for research and development, transport, the management of low, intermediate and high

⁸² <http://www.enresa.es>

level waste, the closure and decommissioning of facilities. The sixth PGRR includes a chapter covering financial and economic aspects. Furthermore, in an annex the report provides additional information about the funding scheme and the different sources of income (see Annex VI).

The financing mechanisms of the Fund managed by ENRESA are regulated under various Royal Decrees, including the cost estimates for the removal of the different types of nuclear waste and the quotas that point out the share of each nuclear power plant. Nevertheless, it seems that precise information about the calculations made by ENRESA on future costs is not even provided to the electricity company that makes payments to the funds.⁸³

As mentioned above, besides the PGRR, ENRESA has to draw up an annual financial and economic report to MITYC, in which the provisions made in the PGRR are updated and specific information about all financial activities is provided [Gonzales/Espejo, 2006]. In addition, ENRESA publishes its major commitments in its annual report. However, facility specific information is not available.

For the first time, the draft of the sixth PGRR was publicly put up for comment for one month on the homepage of MITYC. This way public consultation was initiated [Redondo, 2006]. However, it remains unclear to what extent and by what means the public could have an impact on the decision making process. No changes can be identified comparing the draft of the sixth PGRR and the final version approved by the Council of Ministers.

Furthermore, both the Regulation on Nuclear and Radioactive Facilities and the legislation on environmental impact assessment⁸⁴ require a process of public information and consultation [Spanish Government, 2005, p. 186]. In the case of the latter, before the start of decommissioning the respective plans are published. In a certain period of time every citizen has the right to make comments on those plans before the definitive plan is approved by the Ministry of Environment [Redondo, 2006]. In general, the Law 38/1995 of 12 December recognises the right of any physical or legal person to access information in the hand of the public administrations regarding environmental issues. In addition, in 2004 Spain has approved and ratified the Aarhus Convention [Spanish Government, 2006].

No public participation is possible in the decision making process on decommissioning funding [Gonzales/Espejo, 2006].

⁸³ See Chapter 5, comments of UNESA.

⁸⁴ See RD 6/2001.

5. Stakeholder analysis

ENRESA is clearly the most important stakeholder with regard to decommissioning financing in Spain, managing the one major fund set up for the decommissioning activities of all nuclear power plants, the fuel manufacturing facility Juzbado and other activities.⁸⁵ Since ENRESA assumes almost all responsibility, the role of other stakeholders is considered by many in state and industry of minor importance.⁸⁶

On the governmental level MITYC is closely cooperating with ENRESA [Redondo, 2006] and responsible for the supervision of the activities of ENRESA. ENRESA has to prepare the PGRR every four years and several reports and transmit them to the Ministry. In addition, the Tracking and Control Committee composed of high representatives of the state is in charge of the establishment of investment criteria for the Fund, responsible for the tracking of the financial investments and responsible for the half-yearly report about the performance of the Fund which is transmitted to the Ministry of Finance, MITYC and the respective commission of the Parliament.⁸⁷

With regard to the companies in the nuclear electricity sector, ENDESA, Iberdrola and Union Fenosa are the major players, even though they take a passive role by simply contributing to the fund according to the quotas set up by RD [Pelegri, 2006]. All three companies together with two other companies⁸⁸ are federated through UNESA, the Spanish Electricity Industry Association.⁸⁹ All five members produce around 80% of the electricity in Spain. UNESA coordinates the electricity companies and tries to establish a common position for the communication with the authorities [Villota, 2006].

ENUSA, a public sector company, is the only company still working in the uranium mining and milling sector in Spain. As mentioned above, the only remaining uranium mines and mills are those operating in Saelices el Chico. The owner, ENUSA, is responsible for the financing of the decommissioning. Only those mines that have been operating before 1984, when ENRESA was created, are fully or partly financed by the Fund that is managed by ENRESA.

CIEMAT has several radioactive and nuclear installations and is the biggest shareholder of ENRESA, even though this is due to historic reasons and does not lead to any advantages regarding decommissioning costs, nor does it imply any influence on the activities of ENRESA [Días/Lopez, 2006]. The representatives of this public sector company did not have any defined opinion on the questions of the stakeholder

⁸⁵ For a more detailed analysis of ENRESA's role see Chapters 1 and 2. It should be kept in mind that the Fund is not only meant to finance decommissioning but all the activities mentioned in the PGRR.

⁸⁶ Besides the below mentioned stakeholders several other organization were contacted. The Sociedad Nuclear Española, a major lobby group in the field of nuclear activities in Spain, denied answering the questionnaire for the stakeholder analysis because they thought that it would have been impossible to respect the different opinions of all their members. The Head of Decommissioning in ENDESA, Mr. Jose Perez Torrent said that it would be sufficient if UNESA answered the questionnaire.

⁸⁷ See RD 24/2005 Art. 9, para. 9.

⁸⁸ Enel Viesgo and Hidroeléctrica del Cantábrico

⁸⁹ Asociación Española de la Industria Eléctrica

analysis because the system is regulated by law and CIEMAT simply considers acting according to the legislation [Dias/Lopez, 2006].

With respect to the civil society environmental organizations like Greenpeace and Ecologistas en Acción, which also participate in the round-table on nuclear energy in Spain, try to inform the public about nuclear energy related issues. In addition, the Council for Consumers and Users,⁹⁰ also participating in the discussions of the round-table, offers relevant information. Since those organizations do not possess any other information that those published in the PGRRs, they were not contacted for the purpose of this report.

ENRESA, ENUSA, UNESA, the MITYC and all nuclear power plant licencees assume that theoretically the methodologies of estimating decommissioning costs are sufficient, that the provisions are adequate and that the funding will be available when the money is needed. Nonetheless, UNESA would like to participate more in the actual process of calculating the cost [Villota, 2006]. The representative of ENUSA points out that, in the case of uranium mining, it is very positive that the owner of the facility has the right to carry out the decommissioning activities. ENUSA's internal calculations have shown that the final cost is up to 40% lower than in the case of an external contractor. [Romero, 2006]. The MITYC representative underlines the fact that the Spanish system with an earmarked external fund under state control can be seen as exemplary for other countries. Despite the good system, so his personal opinion, nowadays no one can predict the final costs for decommissioning because nobody knows exactly how much money will be necessary for final waste disposal. Therefore, institutional intervention of the state would be necessary [Redondo, 2006]. The Iberdrola representative states that the calculations seem to be sufficient for the present state of art, adding that technological evolution and macroeconomic parameters can influence the status of the financial provisions, especially in the long term. However, up to now the cash flow for decommissioning activities would have been always available [Pelegri, 2006].

The Union Fenosa representative points out that with the present system problems might occur in the case that the financial resources of the fund are not sufficient at the end of the lifetime of currently operating reactors. Each operating nuclear power plant in Spain contributes to the fund via a quota. If there were no new nuclear power plants in Spain, the last operating reactor would have to compensate the shortcoming of the fund by an enormously high quota [Perez, 2006].

Furthermore, in general stakeholders consider the management of the Fund appropriate. UNESA only believes that a more aggressive investment strategy would imply higher income without putting the financial resources of the fund in danger [Villota, 2006], despite the fact that no specific information about the investment strategy is published.

⁹⁰ Consejo de Consumidores y Usuarios

Even though ENRESA stresses that the company could be seen as “a model company in terms of transparency” [Gonzales/Espejo, 2006], the major critique of UNESA is that the transparency of the fund is not sufficient [Villota, 2006]. According to UNESA, the electricity companies consider that the transparency of ENRESA and the administration should be increased with regard to cost calculation and Fund management since the electricity companies make payments to the Fund [Villota, 2006]. A similar statement was made by the Union Fenosa representative Perez, 2006]. The ENUSA representative underlines, however, that ENRESA and MITYC draw up reports, which are presented to the Spanish Parliament to ensure transparency [Romero, 2006]. This report is not available to the public.

The decommissioning funding scheme in Spain has undergone important changes in the recent past and no further changes are planned in the short or medium term. UNESA wishes that after all the changes in the past the present system of financing will remain stable in order to assure the confidence of the entrepreneur in the field of nuclear energy [Villota, 2006].

Regarding the recent legislative changes in Spain, the MITYC representative thinks that the shift from a system where the fund was essentially financed by the electricity consumer to a system where the owners of the nuclear power plants have to contribute to the Fund can be seen as a step towards the application of the polluter-pays principle [Redondo, 2006]. The transformation of ENRESA from a Public Limited Company (S.A.) into a Public Business Entity (EPE) illustrates that the Spanish state remains committed to take on responsibility for the management of nuclear waste and decommissioning [Redondo, 2006].

A minimum harmonization of decommissioning funding on the European level is seen as necessary by most of the stakeholders [Villota, Pelegri, Redondo 2006]. For example, ENRESA representatives issued statements in favour of a certain harmonization on a European level. Nonetheless, ENRESA made it clear that a harmonization *per se* would not be considered helpful and that the different circumstances in the member states had to be taken into account [Gonzales/Espejo, 2006]. Some consider a need to harmonise the management of funds at the level of criteria but not at the level of methodology [Colenco/Iberdrola, 2005]. The Iberdrola representative underlined that the harmonization should not only cover safety aspects but should also aim at a level economic playing field in a common market. Therefore, those countries, which still do not have minimum requirements, would need to implement the necessary measures [Pelegri, 2006].

The MITYC representative stated that Spain had high hopes for similar conditions in a common market after the European Commission had proposed the so-called Nuclear Package in 2003 [Redondo, 2006]. The CIEMAT representatives underlined the advantages of a separate fund, controlled by the state [Días/Lopez, 2006].

The representatives of ENRESA and ENUSA pointed out that in the recent past the European Commission has required information for many questionnaires, reports and working groups. On the contrary, those institutions regret not having seen any results

drawn from that information and strong interest was expressed to receive the results from the present study [Gonzales/Espejo, 2006; Romero, 2006].

In addition, the ENUSA representative underlined the need to determine the responsibility for the supervision of the formerly operated sites, once all legally required decommissioning activities are completed. He stated that under the current Spanish law ENUSA remains responsible for all possible costs related for an undetermined period of time. [Romero, 2006].

The representatives of CIEMAT stated that, besides the need to harmonize decommissioning funds on a European level, it would be necessary to foster the search for some final disposal facilities in Europe. For economic reasons it was considered useful to coordinate the search in order to identify three or four sites for the whole of Europe.

6. Conclusions and recommendations

The Spanish radioactive waste management agency ENRESA was set up in 1984 in order to organise the management of spent fuel, radioactive waste and decommissioning activities of nuclear facilities. The Royal Decree 1349/2003 updates ENRESA's responsibilities, including processing, conditioning, removal and transport of nuclear waste, the establishment of a system for the long-term management of nuclear waste, and the management of financial resources. ENRESA, a public sector company, will soon be transformed from a Public Limited Company (S.A.) into a Public Business Entity (EPE). By doing so, the state tends to increase its control over the company and to simplify the organisational scheme.

In order to finance backend activities one major fund (hereafter the Fund) was set up, which is managed by ENRESA and controlled by the so-called Tracking and Control Committee, composed of high-level representatives of several Spanish ministries. In addition, ENRESA has to submit regular reports concerning its activities to the Ministry of Industry, Tourism and Trade (MITYC). The financial resources of this restricted fund under state control shall be used for the activities as specified in the General Radioactive Waste Plan (PGRR). The PGRR has to be approved by the Government and establishes the framework of the Spanish national policy on the management of radioactive waste and spent fuel. This includes the decommissioning activities of the country's major nuclear facilities, i.e. all nuclear power plants, the fuel manufacturing facility Juzbado, and those uranium mines that have been in operation before 1984. Moreover, all other activities contemplated in the PGRR, which is drawn up at least every four years or when the MITYC requires it, are financed by the means of this Fund, including R&D costs and others.

The income of the Fund is regulated by Royal Decree (RD) and, if necessary, adjusted on an annual basis. There are four different sources of income for the Fund:

- a certain percentage on the electricity sales price;
- contributions by the licensees of the nuclear power plants as a function of the gross kilowatt-hours produced;
- annual payments by the owner of the fuel manufacturing facility Juzbado;
- service fees paid by other producers of radioactive waste.

The establishment of this system of payments and responsibilities covers the decommissioning activities of most of the Spanish nuclear facilities. However, in the case of uranium mining post 1984 (ENUSA), the operation of research reactors (Labein) and other research activities (CIEMAT) the respective owner of the facility is independently responsible for decommissioning activities and their financing. Even though these activities are mentioned in the PGRR they are not subject to the financing by the Fund that is managed by ENRESA.

ENUSA, a national public sector company, is the only company in Spain that is still operating uranium mines and mills. The last facilities in operation at Saelices el Chico

are planned to be shut down by 2008. If a uranium facility was in operation pre- and post-1984, the respective share of financial responsibility is specified by contract between ENRESA and ENUSA.

The only binding legal text for the decommissioning of uranium mining sites is the RD 2994/1982. It states that for all mining activities in Spain an internal Restoration Fund (Fondo de Restauración) has to be set up for the financing of the clean-up and remediation of the mining sites after the operational period. There is no regulation about the actual amount of money that has to be accumulated and no control system of the fund was set up. The only binding requirement is that the fund should be available at the time of closure, otherwise permission of closure will not be granted by the authorities.

The management and financing of the research reactor ARBI in Bilbao fell within the responsibility of the owner. Labein contracted services of ENRESA but was fully responsible for the decommissioning activities and its financing. No fund for the decommissioning activities of the research reactor ARBI was set up since the relatively small cost of approximately 300,000 Euro were covered by the company's financial resources in the year the decommissioning activities took place.

Apart from few exceptions like the ARBI reactor, facility specific information on cost estimates for decommissioning and waste management and the precise cost calculation methodology is not publicly available. Also, information on the management of the provisions of ENRESA's restricted Fund and ENUSA's internal fund has not been made public. In particular, it is unclear, to what extent provisions are covered by earmarked assets. ENRESA's reports to the Tracking and Control Committee are not public either.

Most stakeholders in the nuclear energy sector in Spain are public entities or at least their stakeholders are under state control and they seem to be confident in the decommissioning and waste management funding system set up. There were some calls for minimum harmonised standards in the field on the EU level, but they were not specific.

A number of uncertainties remain in the Spanish system. They include:

- The reliability of the decommissioning and waste management cost estimates is difficult to judge. There is no precedent of full scale dismantling of a power reactor.
- The clean-up and remediation process of most of the closed uranium mines is considered accomplished. But it is unclear what were the standards and whether the state of the sites can be considered stable.
- There is no regulation that specifies the methodology for the calculation of the provisions for clean-up and remediation of uranium mines and mills. The operator also seems to be free to manage the internal fund without any formal external control.
- There is no operational long term interim or final disposal site for intermediate and high-level wastes. The costs associated with the implementation of such facilities remain speculative.

- According to recent opinion polls, the Spanish citizens are the least favourable to nuclear power of all nuclear countries within the EU. Attempts to site and build final radioactive waste disposal facilities could encounter significant opposition with lengthy and expensive licensing procedures.
- ENRESA takes over responsibility for radioactive waste once it has been accepted from the producer. It also becomes responsible for a nuclear power plant site three years after shutdown (and spent fuel removal). It is unclear how the polluter-pays principle can be guaranteed under these circumstances.
- There is little or no public information about facility specific data. Even utilities complain of the lack of access to information concerning ENRESA's cost calculations and Fund management.
- here is little or no possibility for the public to influence the decision making process. The so far unprecedented possibility for the public to comment on the latest version of the national General Radioactive Waste Plan (PGRR) did not influence its final edition.

Preliminary Recommendations

The Spanish authorities have decided to set up a system based on a separation in principle between operator and control over funding for decommissioning and radioactive waste management. However, the principle is not applied for all nuclear facilities and the reasons for this are unclear. Many aspects could and should be discussed and assessed in a much more open manner without any risk of jeopardising commercially sensitive or security relevant interests.

There are three key issues involved with the financing of nuclear decommissioning and waste management:

1. The reliable evaluation of costs that have to be covered far in the future;
2. The respect of the polluter-pays principle and thus the avoidance of *privatisation of benefits – mutualisation of costs* effects;
3. The availability of funds at the very moment when disbursements are necessary.

Preliminary recommendations on 1

- Facility specific cost evaluations for decommissioning and waste management should be made public. A fixed percentage of the annual provisions (for example 1%) shall be made available for the independent auditing of the cost evaluations and fund management.
- Uranium mining and milling involve spectacular quantities of waste materials and surface areas. The results of decommissioning, waste management, clean-up and site remediation of uranium mining and processing sites is not necessarily certain over the

long term. A thorough environmental and radiological assessment of the status of already closed facilities should be carried out.

- The management and final disposal of high-level radioactive waste involve some of the highest economic uncertainties. Detailed cost assessments should be made publicly available, in particular for a final disposal facility.

Preliminary recommendations on 2

- The current scheme that involves the transfer of responsibilities to ENRESA with the transfer of waste (or three years after shutdown of a nuclear power plant and defuelling) might not guarantee the application of the polluter-pays principle. It should be assessed in detail to what extent the current practice guarantees that even unexpected reconditioning, shipment, final disposal costs are covered by the polluter.
- The decision making process on waste management policy should guarantee not only the full scale implementation of access to information (according to the Aarhus Convention, and the respective EU Directives) but the compulsory integration of independent expertise and other non-technical expression by the civil society into the decision making process. The innovative public consultation on the national General Radioactive Waste Plan (PGRR) does have little practical and no formal influence on the decision-making.

Preliminary recommendations on 3

- If this has not been done yet, the potential inclusion of uranium mining and milling as well as fuel fabrication activities under the ENRESA Fund should be evaluated. The results of the evaluation should be made public.
- Nothing is known about ENRESA's Fund management practices. ENRESA should integrate into its Annual Reports the precise status of the investment packages and in particular the identity of earmarked assets.
- Considering the substantial amounts of financial resources involved the Fund management should be under parliamentary scrutiny with full information access to the public.

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List of Annexes

Annex I: General Programme for the management of spent fuel and radioactive waste

Annex II: Differentiated cost estimates

Annex III: Distribution of future costs covered by the PGRR

Annex IV: Distribution of costs by periods/timeframes

Annex V: Present and future scheme of administrative organization of ENRESA

Annex VI: Scheme for the financing of the activities contemplated in the PGRR

Annex VII: RD 1349/2003 on the Ordering of ENRESA's activities and their financing

Annex VIII: RD 5/2005 on Urgent Measures for the promotion of Productivity and the Improvement of Public Contracting

Annex IX: RD 24/2005 on Reforms to Improve Productivity

Annex I: General Programme for the management of spent fuel and radioactive waste [Consejo de Ministros, 2006, p. D3].

Explanation: Almacenamiento = storage; ATC = interim storage facility; CC.NN. = NPPs; CG = spent fuel; EC = fuel elements; RAA = high level waste; RBBA; very low level waste; RBMA; caracterización = description; construcción = construction period; operación = operational period; ampliación capacidad = extension of capacity; retirada CG y residuos operación = withdrawal of spent fuels and operational waste; desmantelamiento = decommissioning; vigilancia = surveillance; cierre y sellado = closure and sealing; inicio vigilancia institucional = beginning of institutional surveillance

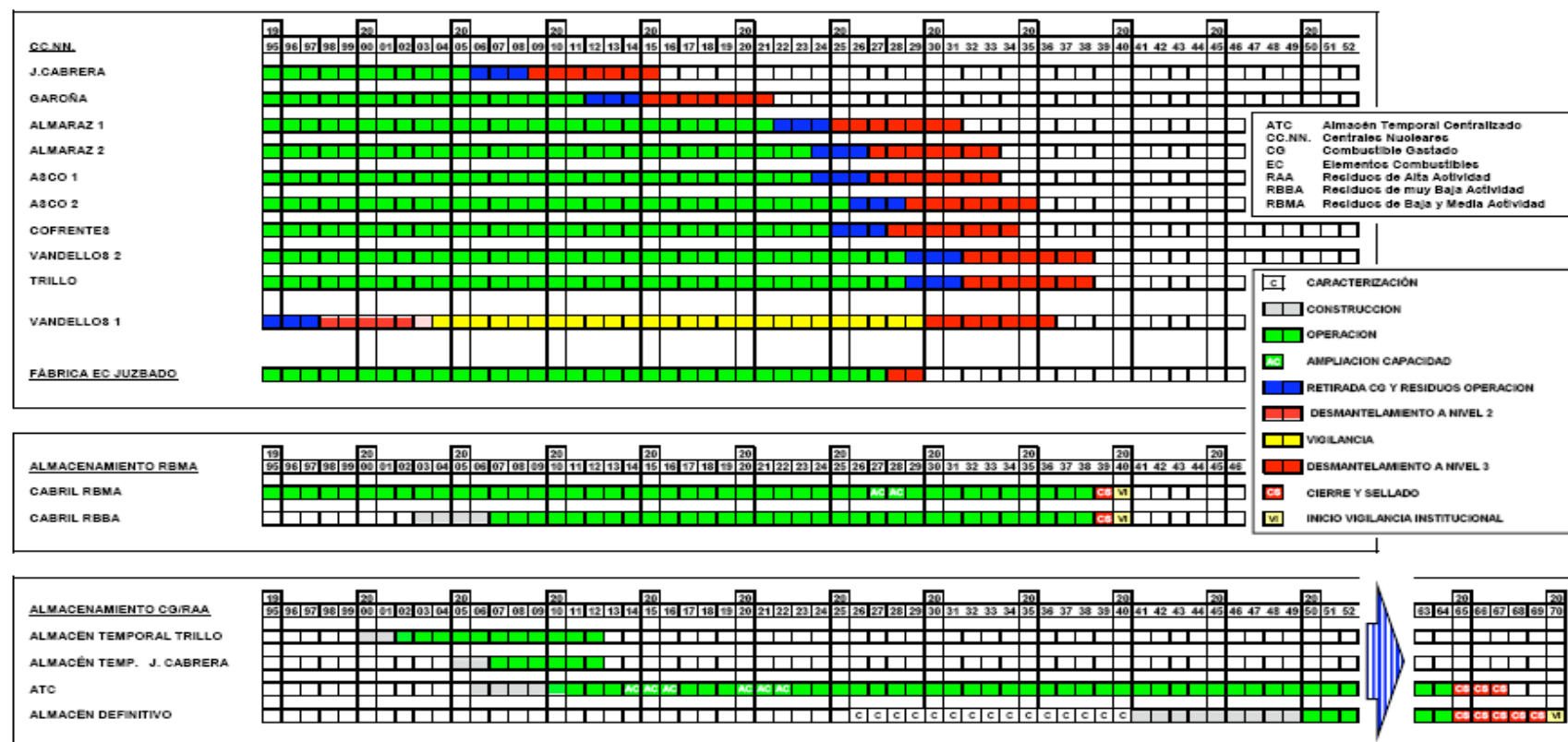


FIGURA D.2. PROGRAMA GENERAL DE LA GESTIÓN DEL COMBUSTIBLE GASTADO Y RESIDUOS RADIATIVOS

Annex II: Differentiated cost estimates [ENRESA, 2006, p. D6ff]

Costs for the management of low and intermediate level waste.

Explanation: Gestión previa = preliminary management; gestión final = final management; servicios de apoyo = supporting services; asignaciones ayuntamientos = allowances for city council (El Cabril); real hasta = actual payments; estimando = estimations; presupuesto = budget.

CUADRO D.1. COSTES DE LA GESTIÓN RBMA

					miles de € 2006
GESTION RBMA	REAL HASTA 31/12/2005	ESTIMADO 2006	PRESUPUESTO 2007-2010	ESTIMADO 2011-2070	TOTAL
GESTION PREVIA	80.248	4.023	29.789	133.311	247.371
GESTION FINAL	230.844	11.809	23.122	249.012	514.687
SERVICIOS DE APOYO	236.687	14.772	55.103	411.409	717.970
ASIGNACIONES AYUNTAMIENTOS	35.519	1.282	7.197	102.465	146.463
TOTAL	583.397	31.886	115.211	896.197	1.626.491

Costs for the management of spent fuel and high level waste.

Explanation: almacenamiento temporal = interim storage; reprocesado = reprocessed; see above.

CUADRO D.2. COSTES DE LA GESTIÓN CG/RAA

					miles de € 2006
GESTION CG/RAA/RMA	REAL HASTA 31/12/2005	ESTIMADO 2006	PRESUPUESTO 2007-2010	ESTIMADO 2011-2070	TOTAL
GESTION PREVIA	36.808	476	1.818	150.000	189.099
ALMACENAMIENTO TEMPORAL	165.330	19.026	419.738	779.406	1.382.499
REPROCESADO	730.035	22.817	23.702	33.499	810.054
GESTION FINAL	145.010	538	2.124	2.877.750	3.025.422
ASIGNACIONES AYUNTAMIENTOS	322.552	17.981	72.951	418.242	831.726
TOTAL	1.399.732	59.838	520.333	4.258.897	6.238.800

Costs for decommissioning/closure of facilities. Clausura de CCNN = decommissioning of NPPs; Clausura Inst. 1 Parte CCN = Fuel manufacturing facility Juzbado and mining activities related to the period before 1984; clausura otras instalaciones = decommissioning of other facilities; see above.

CUADRO D.3. COSTES DE LA CLAUSURA DE INSTALACIONES

					miles de € 2006
CLAUSURA	REAL HASTA 31/12/2005	ESTIMADO 2006	PRESUPUESTO 2007-2010	ESTIMADO 2011-2070	TOTAL
CLAUSURA DE CCNN	182.358	8.202	38.436	2.186.221	2.415.216
CLAUSURA INST. 1ª PARTE CCN	100.759	8.215	14.779	7.000	130.753
CLAUSURA OTRAS INSTALACIONES	8.169	4.908	11.520	0	24.597
ASIGNACIONES AYUNTAMENTOS	4.532	663	2.199	37.768	45.061
TOTAL	295.818	21.888	66.933	2.230.988	2.615.627

Costs for other activities.

Explanation: Gestión residuos especiales = management of special waste; intervenciones = interventions; apoyo al sistema operativo en emergencia = support to the operating system in case of emergency.

CUADRO D.4. COSTES DE OTRAS ACTUACIONES

					miles de € 2006
OTRAS ACTUACIONES	REAL HASTA 31/12/2005	ESTIMADO 2006	PRESUPUESTO 2007-2010	ESTIMADO 2011-2070	TOTAL
GESTIÓN RESIDUOS ESPECIALES	23.364	280	595	0	24.238
INTERVENCIONES	9.633	260	1.057	0	10.950
APOYO SIST. OPER. EMERGENCIAS	4.199	238	950	14.250	19.637
TOTAL	37.196	777	2.601	14.250	54.825

Costs for R&D

CUADRO D.5. COSTES DE I+D

					miles de € 2006
I+D	REAL HASTA 31/12/2005	ESTIMADO 2006	PRESUPUESTO 2007-2010	ESTIMADO 2011-2070	TOTAL
I+D	161.138	6.165	26.499	165.000	358.802
TOTAL	161.138	6.165	26.499	165.000	358.802

Summary of costs.

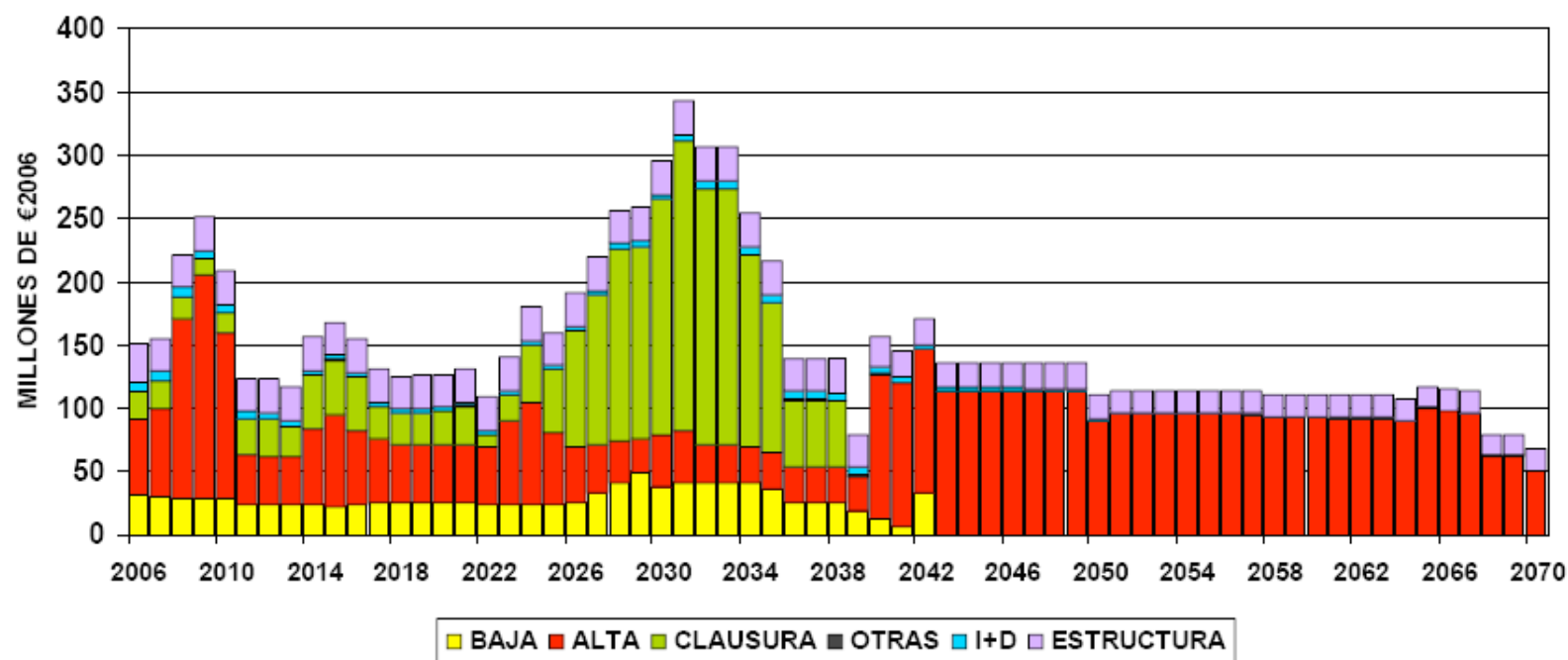
Explanation: see above.

CUADRO D.6. RESUMEN DE COSTES

					miles de € 2006
CONCEPTO	REAL HASTA 31/12/2005	ESTIMADO 2006	PRESUPUESTO 2007-2010	ESTIMADO 2011-2070	TOTAL
GESTION RBMA	583.397	31.688	115.211	896.197	1.626.491
GESTION CG/RAA	1.399.732	59.838	520.333	4.258.897	6.238.800
CLAUSURA	295.818	21.888	66.933	2.230.988	2.615.627
OTRAS ACTUACIONES	37.196	777	2.601	14.250	54.825
I+D	161.138	6.165	26.499	165.000	358.802
ESTRUCTURA	660.863	30.733	106.235	1.325.520	2.123.352
TOTAL	3.138.144	151.088	837.813	8.890.852	13.017.897

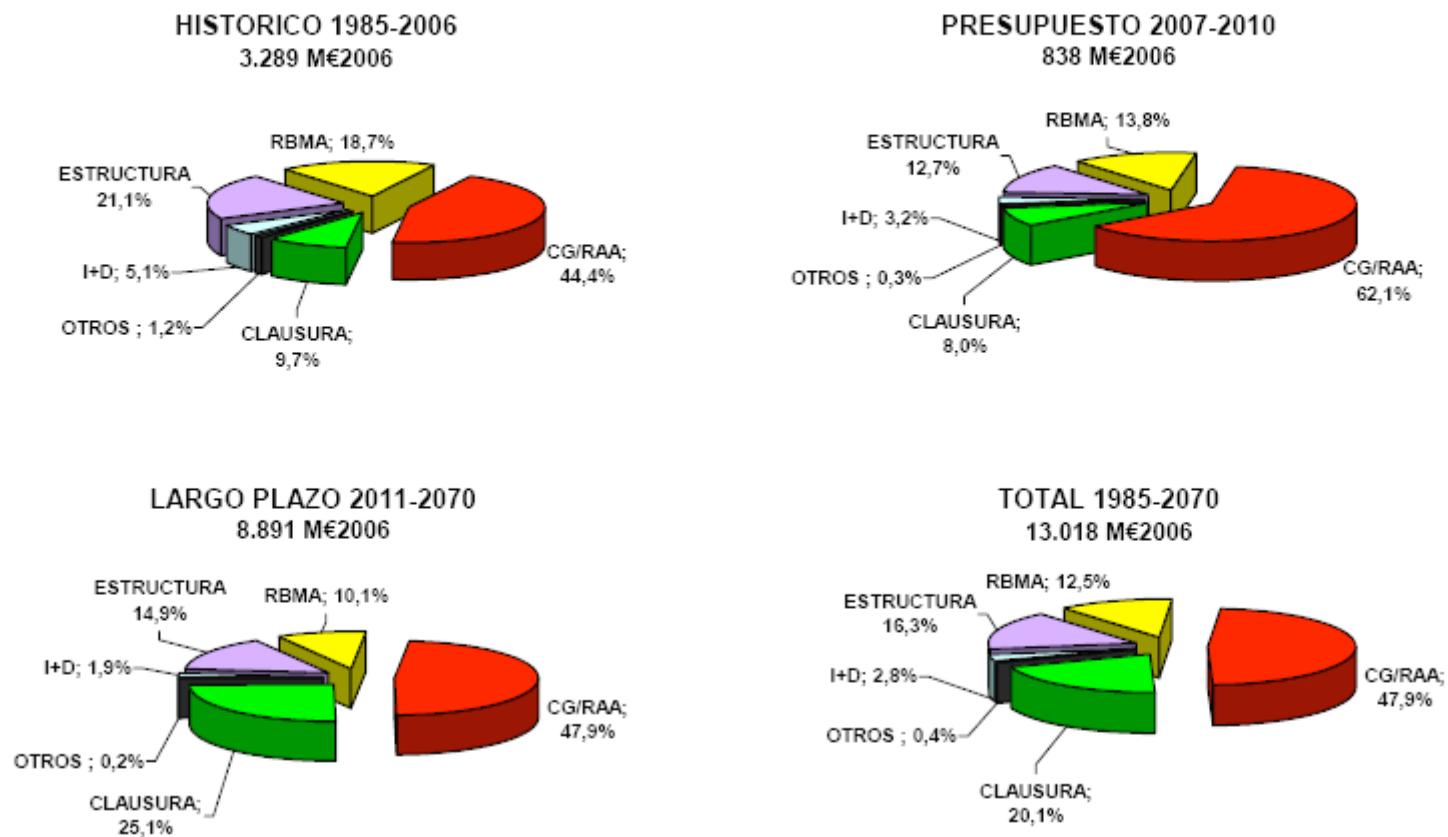
Annex III: Distribution of future costs covered by the PGRR [Consejo de Ministros, 2006, p. D11].

Explanation: Baja = low level waste; alta = high level waste; clausura = closure/decommissioning; otras = others; I+D = R&D; estructura = structural costs.

FIGURA D.3.- DISTRIBUCION DE COSTES FUTUROS DE LA GESTION EN EL TIEMPO


Annex IV: Distribution of costs by periods/timeframes [Consejo de Ministros, 2006, p. D. 12].

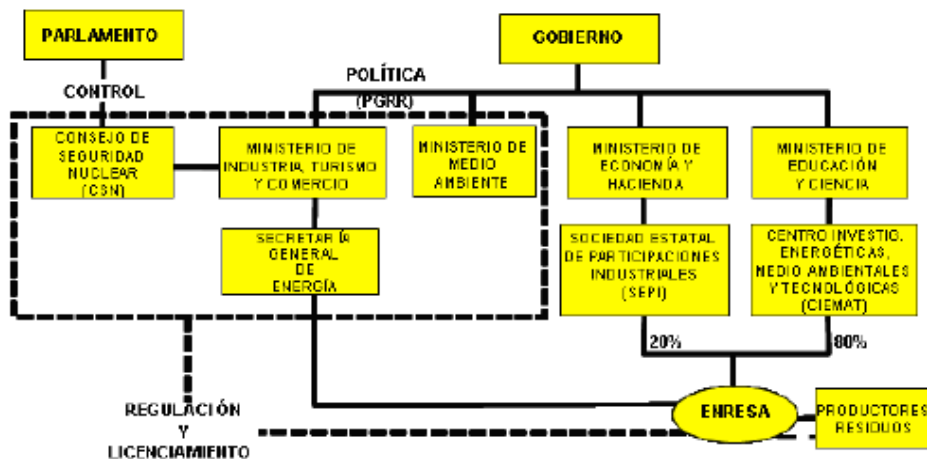
Explanation: CG/RAA = spent waste/high level waste; RBMA = low and medium level waste; clausura = closure

FIGURA D.4.- DISTRIBUCION DE COSTES POR PERIODOS

Annex V: Present and future scheme of administrative organization of ENRESA [Consejo de Ministros, 2006, p. 3].

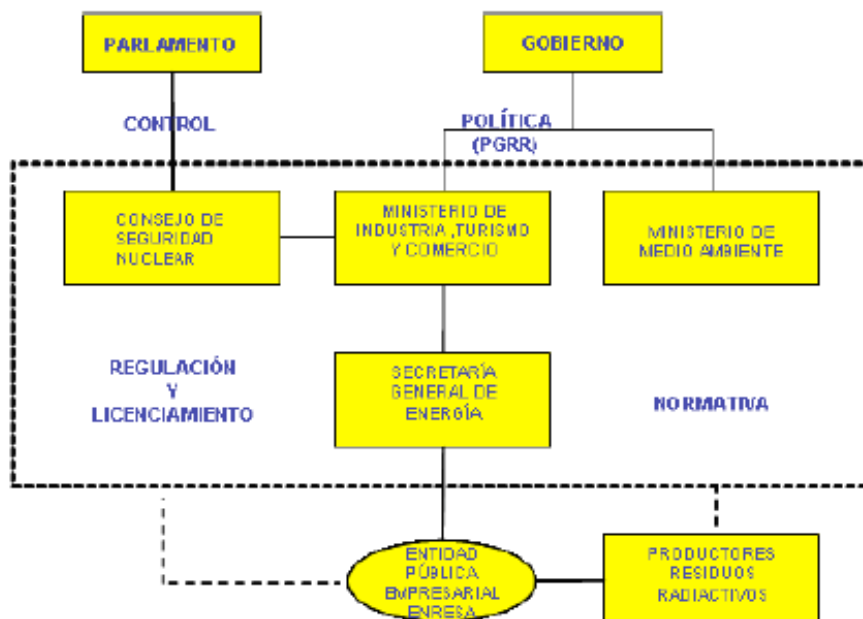
Present scheme of organization:

Explanation: Parlamento = parliament; Gobierno = government; CSN = Nuclear Safety Council; Ministerio de Industria, Turismo y Comercio = Ministry of Industry, Tourism and Commerce (MITYC), Secretaría General de Energía = General Secretary of Energy; Ministerio de Medio Ambiente = Ministry of Environment; Ministerio de Economía y Hacienda = Ministry of Finance; Ministerio de Educación y Ciencia = Ministry of Education and Science; Regulación y Licenciamiento = regulation and licensing; productores residuos = waste producer.



Future scheme of organization (coming into force with the new legal status of ENRESA which has to be approved by RD) [Consejo de Ministros, 2006, p. 3].

Explanation: Entidad Pública Empresarial ENRESA = Public Business Entity ENRESA;



Annex VI: Scheme for the financing of the activities contemplated in the PGRR [Consejo de Ministros, 2006, p. D2].

Explanation: EE = electricity; costes futuros vía tarifas = future costs via tariffs on end consumers; coeficiente global CC.NN. = general coefficient for NPPs; costes unitarios = unitary costs; factores correct. = corrective factors; ingresos = incomes; fondo para la financiación de las actividades del PGRR = Funds for financing of the activities contemplated in the PGRR; otros ingresos = other incomes; ingresos financieros = financial yield; mercado financiero = financial market; tasa según Ley 24/2005 = fees according to RED 5 /2005.

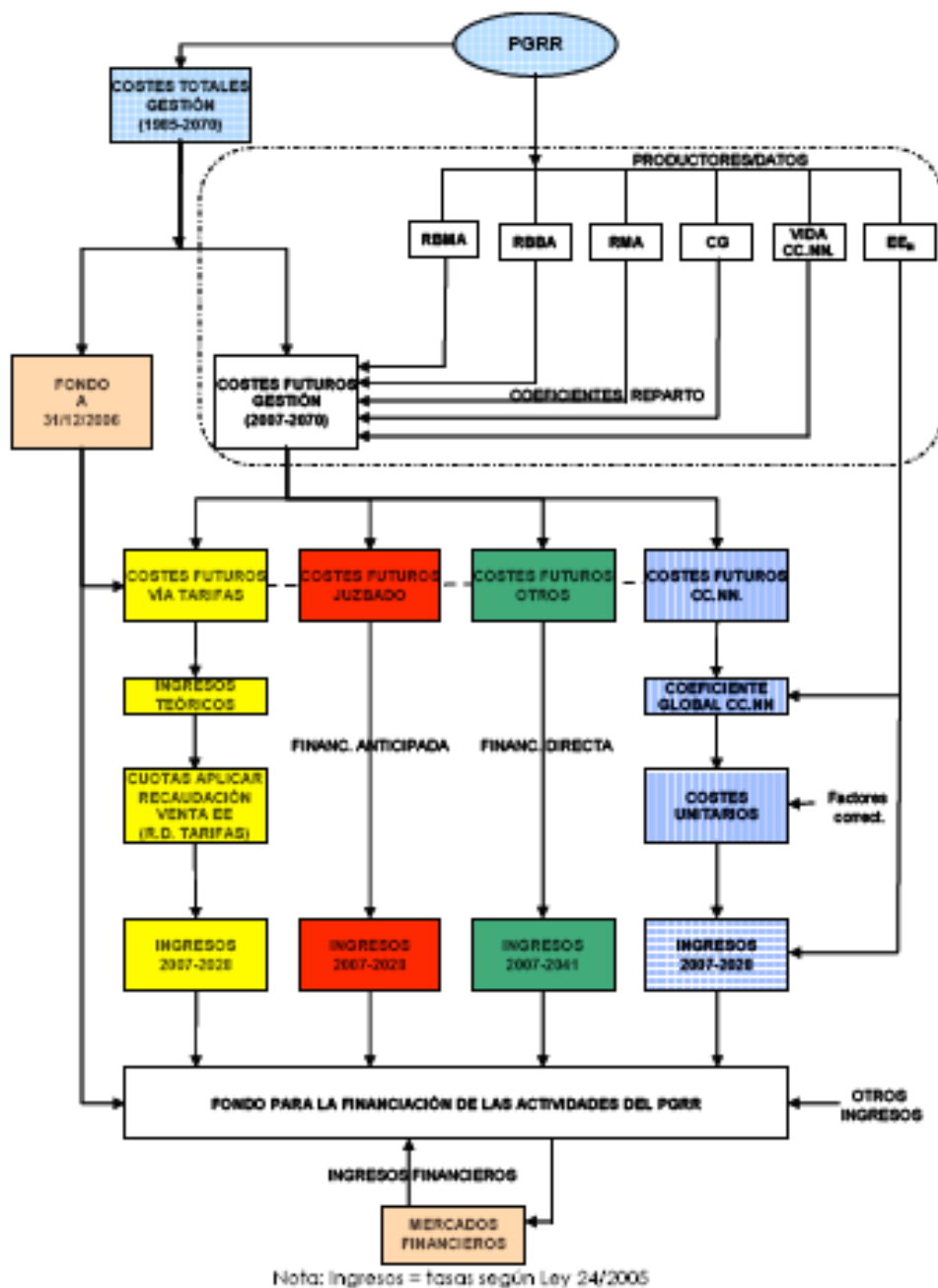


FIGURA D.1 ESQUEMA DE FINANCIACIÓN DE LAS ACTIVIDADES DEL PGRR

Annex VII: RD 1349/2003 on the Ordering of ENRESA's activities and their financing.

Rango: REAL DECRETO

Título: REAL DECRETO 1349/2003, de 31 de octubre, sobre ordenación de las actividades de la Empresa Nacional de Residuos Radiactivos, S. A. (ENRESA), y su financiación.

Nº de Disposición: 1349/2003

Fecha Disposición: 31/10/2003

Organo Emisor: MINISTERIO DE ECONOMÍA

Numero de Boe: 268/2003

Fecha Publicación: 8/11/2003

REAL DECRETO 1349/2003, de 31 de octubre, sobre ordenación de las actividades de la Empresa Nacional de Residuos Radiactivos, S. A. (ENRESA), y su financiación.

Por el Real Decreto 2967/1979, de 7 de diciembre, sobre ordenación de actividades en el ciclo del combustible nuclear, se revisaron y actualizaron sus normas reguladoras, aunque centrándose en la primera parte del ciclo, esto es, en el abastecimiento del combustible nuclear, no considerando otros aspectos relacionados con el almacenamiento de residuos radiactivos procedentes de actividades diferentes al ciclo del combustible y con el desmantelamiento de instalaciones nucleares y radiactivas. Dicho real decreto fue objeto de desarrollo, en lo que a financiación de la segunda parte del ciclo del combustible nuclear se refiere, por la Orden ministerial de 12 de mayo de 1983.

Posteriormente, mediante los Reales Decretos 1522/1984, de 4 de julio, y 1899/1984, de 1 de agosto, se autorizó, respectivamente, la constitución de la Empresa Nacional de Residuos Radiactivos, S. A., (ENRESA), y la realización por ésta de las actividades a que se refiere el artículo 38 de la Ley 25/1964, de 29 de abril, sobre energía nuclear, según el cual "las instalaciones nucleares y radiactivas que trabajen con sustancias radiactivas quedan obligadas a contar con instalaciones especiales para almacenamiento, transporte y manipulación de residuos radiactivos", posibilitando el cumplimiento de la mencionada obligación por parte de los titulares de instalaciones nucleares y radiactivas cuando mediante contrato o cualquier título válido en derecho pudieran utilizar instalaciones especiales de empresas debidamente autorizadas para almacenamiento, transporte y manipulación de residuos radiactivos.

En desarrollo de la disposición adicional séptima de la Ley 40/1994, de 30 de diciembre, de ordenación del Sistema Eléctrico Nacional, mediante el Real Decreto 404/1996, de 1 de marzo, se reguló la composición, aplicación y gestión

del Fondo para la financiación de las actividades incluidas en el Plan general de residuos radiactivos, creándose, al efecto, un Comité de seguimiento y control.

Dada la experiencia adquirida desde la constitución de ENRESA, así como la dispersa normativa por la que se regulan las actividades que esta empresa desarrolla y su financiación, se ha considerado conveniente reagruparla en un único texto, adaptando sus preceptos a la realidad actual, e incluir, asimismo, en su articulado, otras disposiciones contenidas en diversas leyes relativas a la referida materia objeto de regulación, todo ello con el fin de facilitar su conocimiento y aplicación.

Entre los aspectos más significativos, recogidos en este real decreto, cabe señalar que se han actualizado los cometidos de ENRESA, modificado los criterios sobre la periodicidad de elaboración del Plan general de residuos radiactivos, redefinido las modalidades de contraprestación económica de los servicios, con base en lo establecido en la disposición adicional decimocuarta de la Ley 24/2001, de 27 de diciembre, de medidas fiscales, administrativas y del orden social, y revisado los activos financieros en que podrá materializarse el Fondo para la financiación de las actividades incluidas en el Plan general de residuos radiactivos.

Por último, y en cuanto a las disposiciones contenidas en otras leyes, se ha recogido en este real decreto lo establecido en la disposición adicional segunda de la Ley 14/1999, de 4 de mayo, de Tasas y Precios Públicos, por servicios prestados por el Consejo de Seguridad Nuclear, sobre la posible financiación de la gestión de los residuos radiactivos generados en determinados supuestos excepcionales, y en el artículo 172 de la Ley 13/1996, de 30 de diciembre, de medidas fiscales, administrativas y del orden social, relativo a la financiación de los costes derivados de la retirada y gestión de los cabezales de pararrayos radiactivos.

En su virtud, a propuesta del Ministro de Economía, de acuerdo con el Consejo de Estado y previa deliberación del Consejo de Ministros en su reunión del día 31 de octubre de 2003,

DISPONGO:

Artículo 1. Objeto.

1. El objeto de este real decreto es regular determinados aspectos relacionados con la gestión de los residuos radiactivos, el combustible gastado y el desmantelamiento y clausura de instalaciones nucleares y radiactivas, así como su financiación a través del Fondo para la financiación de las actividades del Plan general de residuos radiactivos.
2. A los efectos de este real decreto, la referencia a la gestión de residuos radiactivos se considera que, con carácter general, incluye la propia gestión de los residuos radiactivos y la del combustible gastado, sin perjuicio de la consideración que otras disposiciones legales pudieran otorgar a dicho combustible.

Artículo 2. Competencias.

1. Corresponde al Gobierno establecer la política sobre gestión de los residuos radiactivos y desmantelamiento y clausura de instalaciones nucleares y radiactivas, mediante la aprobación del Plan general de residuos radiactivos, que

le será elevado por el Ministro de Economía, y del que dará cuenta posteriormente a las Cortes Generales.

2. Corresponde al Ministerio de Economía el seguimiento y control sobre las actuaciones y planes, tanto técnicos como económicos, en relación con las actividades indicadas en el apartado anterior.

Artículo 3. Disposiciones generales.

1. Los explotadores de instalaciones nucleares y radiactivas que trabajen con sustancias radiactivas quedan obligados a contar con instalaciones especiales para almacenamiento, transporte y manipulación de residuos radiactivos, de acuerdo con lo establecido en el artículo 38 de la Ley 25/1964, de 29 de abril, sobre energía nuclear.

2. Se considerará que los explotadores de instalaciones nucleares y radiactivas cuentan, asimismo, con las instalaciones a que se refiere el apartado anterior cuando mediante contratos o cualquier título válido en derecho puedan utilizar los servicios de empresas, que deberán ser autorizadas mediante real decreto, y que dispongan de instalaciones para el almacenamiento, transporte y manipulación de residuos radiactivos, aunque sean propiedad o titularidad de terceros.

3. Estas empresas prestarán los servicios requeridos ajustándose a las necesidades derivadas del interés público y de la garantía de prestación del servicio.

Artículo 4. Autorización a la Empresa Nacional de Residuos Radiactivos, S. A., para la prestación de servicios y establecimiento de sus cometidos.

1. La Empresa Nacional de Residuos Radiactivos, S. A., (ENRESA), queda autorizada para prestar los servicios a que se refiere el artículo 3.2 y tendrá los siguientes cometidos:

- a) Tratar y acondicionar los residuos radiactivos.
- b) Buscar emplazamientos, diseñar, construir y operar centros para el almacenamiento temporal y definitivo de los residuos radiactivos.
- c) Establecer sistemas para la recogida, transferencia y transporte de los residuos radiactivos.
- d) Adoptar medidas de seguridad en el transporte de residuos radiactivos, de acuerdo con lo previsto en la reglamentación específica en materia de transporte de mercancías peligrosas y con lo que determinen las autoridades y organismos competentes.
- e) Gestionar las operaciones relativas al desmantelamiento y clausura de instalaciones nucleares y radiactivas.
- f) Actuar, en caso de emergencias nucleares o radiológicas, como apoyo al sistema nacional de protección civil y a los servicios de seguridad, en la forma y circunstancias que requieran los organismos y autoridades competentes.
- g) Acondicionar de forma definitiva y segura los estériles originados en la minería y fabricación de concentrados de uranio, en la forma y circunstancias que requieran los organismos y autoridades competentes, teniendo en cuenta, en su caso, los planes y previsiones del explotador.
- h) Establecer sistemas que garanticen la gestión segura a largo plazo de sus instalaciones para almacenamiento de residuos radiactivos.
- i) Establecer los planes de investigación y desarrollo necesarios para el desempeño de sus cometidos.
- j) Efectuar los estudios técnicos y económico-financieros necesarios que tengan

en cuenta los costes diferidos derivados de sus cometidos para establecer las necesidades económicas correspondientes.

k) Gestionar el Fondo para la financiación de las actividades del Plan general de residuos radiactivos de acuerdo con lo establecido en este real decreto.

l) Cualquier otra actividad necesaria para el desempeño de los anteriores cometidos.

2. ENRESA tendrá la consideración de explotador de sus instalaciones para la gestión de los residuos radiactivos a los efectos previstos en la legislación aplicable a las instalaciones nucleares y radiactivas. Asimismo, ENRESA actuará como explotador de aquellas otras actividades que desarrolle para las que se determine tal condición.

Artículo 5. Contratos-tipo.

1. Los servicios de gestión de residuos radiactivos que presta ENRESA a los explotadores de instalaciones nucleares y radiactivas se regirán por contratos, basados en los correspondientes contratos-tipo que deberán ser aprobados por el Ministerio de Economía.

2. En dichos contratos se establecerá el plazo de éstos, que se extenderá hasta el final de la vida de las instalaciones, incluyendo el desmantelamiento de las instalaciones nucleares y, en su caso, de las instalaciones radiactivas, así como la contraprestación económica, cuando proceda, de los servicios a realizar, de acuerdo con lo establecido en este real decreto.

Artículo 6. Plan general de residuos radiactivos.

Para el cumplimiento de lo establecido en el artículo 2, ENRESA elaborará y enviará al Ministerio de Economía:

a) Cada cuatro años y, en todo caso, cuando lo requiera el Ministerio de Economía, una revisión del Plan general de residuos radiactivos, que comprenderá:

1.o Las actuaciones necesarias y las soluciones técnicas que vayan a desarrollarse durante el horizonte temporal del plan, encaminadas a la adecuada gestión de los residuos radiactivos y al desmantelamiento y clausura de instalaciones nucleares y, en su caso, radiactivas.

2.o Las previsiones económicas y financieras para llevar a cabo lo establecido en el párrafo anterior.

b) Durante el primer semestre de cada año:

1.o Una memoria que incluya los aspectos técnicos y económicos relativos a las actividades del ejercicio anterior, y su comparación con el presupuesto correspondiente.

2.o Un estudio económico-financiero actualizado del coste de las actividades contempladas en el Plan general de residuos radiactivos, incluida la retribución de la actividad gestora del plan, así como la adecuación a dicho coste de los mecanismos financieros vigentes.

c) Antes del 30 de noviembre de cada año, una justificación técnico-económica de la adecuación del presupuesto anual correspondiente al ejercicio siguiente, y su proyección para los tres años siguientes, a lo establecido en el estudio económico-financiero actualizado del coste de las actividades contempladas en el Plan general de residuos radiactivos. En el caso de que, excepcionalmente, fuera necesario afrontar costes no previstos en el mencionado estudio económico-financiero, deberá remitir, previamente, la justificación correspondiente.

Artículo 7. Fondo para la financiación de las actividades del Plan general de residuos radiactivos.

1. El Fondo para la financiación de las actividades del Plan general de residuos radiactivos, a que se refiere la disposición adicional sexta de la Ley 54/1997, de 27 de noviembre, del Sector Eléctrico, modificada por la disposición adicional decimocuarta de la Ley 24/2001, de 27 de diciembre, de medidas fiscales, administrativas y del orden social, se dotará mediante los ingresos procedentes de las vías que se indican a continuación, incluidos los rendimientos financieros generados por aquéllos:

a) Las cantidades ingresadas por tarifas de suministro a clientes finales y tarifas de acceso procedentes de la aplicación de porcentajes sobre la recaudación por venta de energía eléctrica.

b) Las cantidades ingresadas para la gestión de los residuos radiactivos derivados de la fabricación de elementos combustibles y para el desmantelamiento de las instalaciones de fabricación de elementos combustibles.

Se establecerá un mecanismo de aportaciones anuales, durante la vida operativa de las instalaciones de fabricación de elementos combustibles, de tal manera que estos ingresos más los rendimientos financieros cubran los costes previstos de estas actividades de acuerdo con las estimaciones del Plan general de residuos radiactivos.

c) Facturación a los explotadores de las instalaciones radiactivas generadoras de residuos radiactivos en la medicina, industria, agricultura e investigación, mediante tarifas aprobadas por el Ministerio de Economía.

d) Cualquier otra modalidad de ingresos no contemplados en los párrafos anteriores.

2. Las dotaciones al Fondo sólo podrán ser invertidas en gastos, trabajos, proyectos e inmovilizaciones derivados de actuaciones previstas en el Plan general de residuos radiactivos, sin perjuicio de lo establecido en el artículo 9.

3. Al concluir el período de gestión de los residuos radiactivos y de desmantelamiento de las instalaciones contemplados en el Plan general de residuos radiactivos, las cantidades totales ingresadas en el Fondo a través de las distintas vías de financiación deberán cubrir los costes incurridos, de tal manera que el saldo final resultante sea cero

Artículo 8. Financiación con cargo a la tarifa eléctrica.

1. Los porcentajes a que se refiere el apartado 1.a) del artículo 7 estarán recogidos en el real decreto por el que se establece la tarifa eléctrica de cada año, de conformidad con la Ley 54/1997, de 27 de noviembre, del Sector Eléctrico, el Real Decreto 1164/2001, de 26 de octubre, por el que se establecen tarifas de acceso a las redes de transporte y distribución de energía eléctrica, y el Real Decreto 1432/2002, de 27 de diciembre, por el que se establece la metodología para la aprobación o modificación de la tarifa eléctrica media o de referencia y se modifican algunos artículos del Real Decreto 2017/1997, de 26 de diciembre, por el que se organiza y regula el procedimiento de liquidación de los costes de transporte, distribución y comercialización a tarifa, de los costes permanentes del sistema y de los costes de diversificación y seguridad de abastecimiento.

2. Dichos porcentajes se establecerán con base en los siguientes criterios:

a) Las cantidades totales procedentes de esta vía, más los rendimientos financieros correspondientes, deberán cubrir los costes a que haya que hacer

frente, a partir de la entrada en vigor de este real decreto, para:

1.o La gestión de los residuos radiactivos generados en la producción de energía nucleoelectrica desde la fecha de inicio de dicha producción. A estos efectos, el coste de gestión de los residuos radiactivos en las propias instalaciones de producción de energía nucleoelectrica incluirá, únicamente, el correspondiente al coste de las actividades realizadas por ENRESA y, en su caso, los costes de terceros derivados de dichas actividades.

2.o La gestión de los residuos radiactivos procedentes de actividades de investigación que, a juicio del Ministerio de Economía, hayan estado relacionadas directamente con la producción de energía nucleoelectrica.

3.o El desmantelamiento y clausura de las instalaciones de producción de energía nucleoelectrica, así como la gestión de los residuos radiactivos resultantes.

4.o Las operaciones de desmantelamiento y clausura que deban realizarse como consecuencia de la minería y producción de concentrados de uranio, con anterioridad a la autorización de la constitución de ENRESA.

5.o Otros costes en que deba incurrir ENRESA para el desempeño de sus cometidos en relación con las actividades anteriormente enumeradas.

b) El cálculo de las cantidades teóricas necesarias a recaudar se realizará teniendo en cuenta lo indicado en el párrafo a) anterior y de forma que proporcione, a lo largo del período en que exista generación de energía nucleoelectrica, los ingresos anuales resultantes del estudio económico-financiero a que se hace referencia en el párrafo b).2.o del artículo 6.

3. El procedimiento de recaudación y liquidación de las cantidades ingresadas en aplicación de los porcentajes que se aprueban en el real decreto por el que se establece la tarifa eléctrica media o de referencia de cada año se ajustará a lo dispuesto en el Real Decreto 2017/1997, de 26 de diciembre, por el que se organiza y regula el procedimiento de liquidación de los costes de transporte, distribución y comercialización a tarifa, de los costes permanentes del sistema y de los costes de diversificación y seguridad de abastecimiento.

Artículo 9. Financiación con cargo a los rendimientos financieros.

1. En supuestos excepcionales la gestión de los residuos radiactivos generados podrá ser efectuada con cargo a los rendimientos financieros integrados en el Fondo para la financiación de las actividades del Plan general de residuos radiactivos, cuando el coste de esta gestión no pueda repercutirse de conformidad con la normativa vigente y así lo determine el Ministerio de Economía, según lo dispuesto en la disposición adicional segunda de la Ley 14/1999, de 4 de mayo, de Tasas y Precios Públicos, por servicios prestados por el Consejo de Seguridad Nuclear.

2. Asimismo, se financiarán con cargo a los rendimientos financieros integrados en el Fondo los costes derivados de la retirada y gestión de los cabezales de pararrayos radiactivos, según lo dispuesto en el artículo 172 de la Ley 13/1996, de 30 de diciembre, de medidas fiscales, administrativas y de orden social.

Artículo 10. Gestión financiera del Fondo.

1. La gestión financiera del Fondo se regirá por los principios de seguridad, rentabilidad y liquidez, y se podrá materializar en:

a) Valores mobiliarios de renta fija o variable con cotización en bolsa en un

mercado organizado reconocido oficialmente y de funcionamiento regular abierto al público o, al menos, a entidades financieras, deuda del Estado, títulos del mercado hipotecario y otros activos e instrumentos financieros.

b) Instrumentos derivados para la estructuración, transformación o para la cobertura de operaciones de inversión de la cartera de inversiones financieras.

c) Depósitos en entidades financieras, créditos y préstamos que deberán formalizarse en documento público o mediante póliza intervenida por fedatario público.

d) Bienes inmuebles.

e) Valores extranjeros admitidos a cotización en bolsas extranjeras o en mercados organizados.

f) Cualquier otro activo o instrumento de inversión que, cumpliendo los principios que rigen la gestión financiera del Fondo, considere adecuado el Comité de seguimiento y control a que se refiere el artículo 11.

2. A efectos de lo dispuesto en el artículo 72 de la Ley 40/1998, de 9 de diciembre, del Impuesto sobre la Renta de las Personas Físicas y otras Normas Tributarias, cuando las inversiones de gestión del Fondo se materialicen en activos financieros, se considerarán poseídos por ENRESA, para dar cumplimiento a obligaciones legales y reglamentarias.

Artículo 11. Comité de seguimiento y control.

1. La supervisión, control y calificación de las inversiones transitorias relativas a la gestión financiera del Fondo corresponden al Comité de seguimiento y control, adscrito al Ministerio de Economía a través de la Secretaría de Estado de Energía, Desarrollo Industrial y de la Pequeña y Mediana Empresa, que, bajo la presidencia del Secretario de Estado, está compuesto por el Interventor General de la Administración del Estado, el Subsecretario de Ciencia y Tecnología, el Director General del Tesoro y Política Financiera y el Director General de Política Energética y Minas, actuando como secretario el Subdirector General de Energía Nuclear.

2. Las funciones del Comité de seguimiento y control son:

a) El desarrollo de los criterios sobre la composición de los activos del Fondo.

b) Realizar el seguimiento de las inversiones financieras, comprobando la aplicación de los principios establecidos en el apartado 1 del artículo 10.

c) Formular informes con periodicidad semestral, comprensivos de la situación del Fondo y de las inversiones correspondientes a su gestión financiera, así como de la calificación que merezca al comité, exponiendo las observaciones que considere adecuadas. Dicho informe se entregará a los Ministros de Economía y de Hacienda.

3. Sin perjuicio de lo establecido en este real decreto, el funcionamiento del comité se ajustará a lo previsto en el capítulo II del título II de la Ley 30/1992, de 26 de noviembre, de Régimen Jurídico de las Administraciones Públicas y del Procedimiento Administrativo Común.

Artículo 12. Retribución de la actividad gestora del Plan general de residuos radiactivos.

La retribución de la actividad gestora del Plan general de residuos radiactivos consistirá en una remuneración del capital de la empresa que lo realiza, equivalente a la rentabilidad media de los activos financieros integrados en el Fondo, que se fijará anualmente en la memoria

a que se hace referencia en el artículo 6.b).1.o

Disposición derogatoria única. Derogación normativa.

Quedan derogados el Real Decreto 1522/1984, de 4 de julio, por el que se autoriza la constitución de la Empresa Nacional de Residuos Radiactivos, Sociedad Anónima (ENRESA); el Real Decreto 1899/1984, de 1 de agosto, por el que se modifica el Real Decreto 2967/1979, de 7 de diciembre, sobre ordenación de actividades en el ciclo del combustible nuclear, y el Real Decreto 404/1996, de 1 de marzo, por el que se desarrolla la Ley 40/1994, de 30 de diciembre, de ordenación del Sistema Eléctrico Nacional, y se modifica el Real Decreto 1522/1984, de 4 de julio, por el que se autoriza la constitución de la Empresa Nacional de Residuos Radiactivos, Sociedad Anónima (ENRESA), así como todas las normas de igual o inferior rango en lo que contradigan o se opongan a lo dispuesto en este real decreto.

Disposición final primera. Habilitación de desarrollo.

El Ministro de Economía, en el ámbito de sus competencias, podrá dictar las disposiciones oportunas para el desarrollo y aplicación de este real decreto.

Disposición final segunda. Entrada en vigor.

El presente real decreto entrará en vigor el día siguiente al de su publicación en el "Boletín Oficial del Estado".

Dado en Madrid, a 31 de octubre de 2003.

JUAN CARLOS R.

El Vicepresidente Primero del Gobierno

y Ministro de Economía,

RODRIGO DE RATO Y FIGAREDO

Annex VIII: RD 5/2005 on Urgent Measures for the promotion of Productivity and the Improvement of Public Contracting.

Real Decreto Ley 5/2005, de 11 de marzo, de reformas urgentes para el impulso a la productividad y la mejora de la contratación pública.

Artículo 25. Fondo para la financiación de las actividades del Plan general de residuos radiactivos.

La disposición adicional sexta de la Ley 54/1997, de 27 de noviembre, del Sector Eléctrico, queda redactada en los siguientes términos:

«Disposición adicional sexta. Fondo para la financiación de las actividades del Plan general de residuos radiactivos.

1. Las cantidades ingresadas por tarifas, peajes o precios, así como cualquier otra forma de financiación de los costes de los trabajos correspondientes a la gestión de los residuos radiactivos y del combustible gastado, y al desmantelamiento y clausura de instalaciones, incluidos los rendimientos financieros generados por ellas, se destinará a dotar una provisión, dotación que tendrá la consideración de partida deducible en el Impuesto sobre Sociedades.

Las cantidades recogidas en la provisión antes mencionada sólo podrán ser invertidas en gastos, trabajos, proyectos e inmovilizaciones derivados de actuaciones previstas en el Plan general de residuos radiactivos aprobado por el Gobierno.

2. La provisión a que se refiere el apartado 1 constituirá el denominado Fondo para la financiación de las actividades del Plan general de residuos radiactivos.

3. Tendrán la consideración de coste de diversificación y seguridad de abastecimiento, a los efectos previstos en el artículo 17.1.e), las cantidades destinadas a dotar la parte de la provisión para la financiación de los costes correspondientes a la gestión de los residuos radiactivos y del combustible gastado generados en las centrales nucleares, y a su desmantelamiento y clausura, que sean atribuibles a la explotación de éstas llevada a cabo con anterioridad al 1 de abril de 2005.

Asimismo, tendrán dicha consideración las cantidades destinadas a dotar la parte de la provisión para la financiación de los costes de la gestión de residuos radiactivos procedentes de aquellas actividades de investigación que el Ministerio de Industria, Turismo y Comercio determine que han estado directamente relacionadas con la generación de energía nucleoelectrónica, las operaciones de desmantelamiento y clausura que deban realizarse como consecuencia de la minería y producción de concentrados de uranio con anterioridad al 4 de julio de 1984, y de aquellos otros costes que se especifiquen mediante real decreto.

4. Las cantidades destinadas a dotar la parte de la provisión para la financiación de los costes correspondientes a la gestión de los residuos radiactivos y del combustible gastado generados en las centrales nucleares, y a su desmantelamiento y clausura, que sean atribuibles a la explotación de éstas llevada a cabo con posterioridad al 31 de marzo de 2005, no tendrán la consideración de coste de diversificación y seguridad

de abastecimiento y serán financiadas por los titulares de las centrales nucleares durante su explotación. A estos efectos, se considerarán atribuibles a la explotación posterior al 31 de marzo de 2005 los costes asociados a la gestión de los residuos radiactivos que se introduzcan en el almacén de la central a partir de dicha fecha, así como la parte proporcional de los costes del desmantelamiento y clausura que corresponda al período de explotación que le reste a la central en esa fecha. En lo que se refiere al combustible gastado, se considerarán atribuibles a la explotación posterior al 31 de marzo de 2005 los costes asociados a la gestión del combustible gastado resultante del combustible nuevo que se introduzca en el reactor en las paradas de recarga que concluyan con posterioridad a dicha fecha.

Se imputarán a la gestión de los residuos radiactivos y del combustible gastado, y al desmantelamiento y clausura, todos los costes relativos a las actividades técnicas y servicios de apoyo necesarios para llevar a cabo dichas actuaciones, en los que se incluyen los correspondientes a los costes de estructura y a los proyectos y actividades de I+D, de acuerdo todo ello con lo previsto en el Plan general de residuos radiactivos.

5. A los efectos de financiación de los costes a que se refiere el apartado anterior, la Empresa Nacional de Residuos Radiactivos, SA (ENRESA), facturará a los titulares de las centrales nucleares las cantidades que resulten de multiplicar los kilowatios hora brutos (kWh) generados por cada una de ellas en cada mes natural, a partir del 1 de abril de 2005, por un valor unitario específico para cada central expresado en céntimos de euro. Para el año 2005, este valor unitario, de acuerdo con los cálculos económicos actualizados, será el siguiente:

José Cabrera: 0,216.

Santa M^a de Garoña: 0,220.

Almaraz I: 0,186.

Ascó I: 0,186.

Almaraz II: 0,186.

Cofrentes: 0,205.

Ascó II: 0,186.

Vandellós II: 0,186.

Trillo: 0,186.

La facturación tendrá lugar con carácter mensual durante el período comprendido entre los 30 y 45 días siguientes al mes de generación de la energía, y los titulares de las centrales nucleares deberán hacer efectivo el pago en un plazo máximo de 30 días a partir de la fecha de facturación.

Estos valores unitarios serán revisados para cada año mediante real decreto con base en una memoria económico-financiera actualizada del coste de las actividades correspondientes.

6. En el caso de que se produzca un cese de la explotación anticipado respecto al período establecido en el Plan general de residuos radiactivos por causa ajena a la voluntad del titular, el déficit de financiación que, en su caso, existiese tendrá la consideración de coste de diversificación y seguridad de abastecimiento. En el caso contrario, el titular deberá cubrir dicho déficit durante los tres años siguientes al cese.

7. La provisión existente a 31 de marzo de 2005 no podrá destinarse a la financiación de los costes a que se refiere el apartado 4.

8. Se financiarán con cargo a los rendimientos financieros de la parte de la provisión a que se refiere el apartado 3 los costes correspondientes a la retirada y gestión de los cabezales de los pararrayos radiactivos, y a la gestión de los residuos radiactivos generados en los supuestos excepcionales previstos en el artículo 2 de la Ley 15/1980, de 22 de abril, de Creación del Consejo de Seguridad Nuclear, estos últimos cuando no puedan repercutirse de conformidad con la normativa vigente y así lo determine el Ministerio de Industria, Turismo y Comercio.

9. El Estado asumirá la titularidad de los residuos radiactivos una vez se haya procedido a su almacenamiento definitivo. Asimismo, asumirá la vigilancia que, en su caso, pudiera requerirse tras la clausura de una instalación nuclear o radiactiva una vez haya transcurrido el período de tiempo que se establezca en la correspondiente declaración de clausura.

10. Se autoriza al Gobierno para adoptar las disposiciones necesarias para la aplicación de lo establecido en esta disposición adicional».

Annex IX: RD 24/2005 on Reforms to Improve Productivity.

Artículo 8. Creación de la entidad pública empresarial ENRESA de gestión de residuos radiactivos.

1. Se añade una disposición adicional sexta bis a la Ley 54/1997, de 27 de noviembre, del Sector Eléctrico, con la siguiente redacción:

DISPOSICIÓN ADICIONAL SEXTA BIS. Creación de la entidad pública empresarial ENRESA de gestión de residuos radiactivos.

1. La gestión de los residuos radiactivos, incluido el combustible gastado y el desmantelamiento y clausura de instalaciones nucleares y radiactivas, constituye un servicio público esencial que se reserva, de conformidad con el artículo 128.2 de la Constitución Española, a la titularidad del Estado. Este servicio será gestionado directamente por la entidad pública empresarial ENRESA de gestión de residuos radiactivos, de acuerdo con el Plan General de Residuos Radiactivos aprobado por el Gobierno.

2. Se crea la entidad pública empresarial ENRESA de gestión de residuos radiactivos, como organismo público de los previstos en el artículo 43.1.b de la Ley 6/1997, de 14 de abril, de Organización y Funcionamiento de la Administración General del Estado. Dicha entidad queda adscrita al Ministerio de Industria, Turismo y Comercio, a través de la Secretaría General de Energía.

3. La entidad pública empresarial ENRESA tiene personalidad jurídica propia, plena capacidad de obrar y patrimonio propio y se regirá por lo establecido en esta disposición adicional, en su propio estatuto, en la citada Ley 6/1997, de 14 de abril, y en las demás normas que le sean de aplicación.

4. La entidad pública empresarial ENRESA gestionará, administrará y dispondrá de los bienes y derechos que integran su patrimonio, correspondiéndole la tenencia, administración, adquisición y enajenación de los títulos representativos del capital de las sociedades en las que participe o pueda participar en el futuro.

Para el cumplimiento de su objeto, la entidad pública empresarial podrá realizar toda clase de actos de administración y disposición previstos en la legislación civil y mercantil. Asimismo, podrá realizar cuantas actividades comerciales o industriales estén relacionadas con dicho objeto, conforme a lo acordado por sus órganos de gobierno. Podrá actuar, incluso, mediante sociedades por ella participadas.

5. El objeto de la entidad pública empresarial ENRESA es la prestación del servicio público de gestión de los residuos radiactivos, incluido el combustible gastado, y el desmantelamiento y clausura de instalaciones nucleares y

radiactivas, la elaboración de las propuestas del Plan General de Residuos Radiactivos, la ejecución de lo establecido en dicho Plan y la gestión del Fondo para la financiación de las actividades del Plan General de Residuos Radiactivos, todo ello de conformidad con la previsión de dicho Plan.

Para el cumplimiento de su objeto realizará, entre otras, las siguientes funciones:

- a. Tratar y acondicionar los residuos radiactivos.
- b. Buscar emplazamientos, diseñar, construir y operar centros para el almacenamiento temporal y definitivo de los residuos radiactivos.
- c. Establecer sistemas para la recogida, transferencia y transporte de los residuos radiactivos.
- d. Adoptar medidas de seguridad en el transporte de residuos radiactivos, de acuerdo con lo previsto en la reglamentación específica en materia de transporte de mercancías peligrosas y con lo que determinen las autoridades y organismos competentes.
- e. Gestionar las operaciones relativas al desmantelamiento y clausura de instalaciones nucleares y radiactivas.
- f. Actuar, en caso de emergencias nucleares o radiológicas, como apoyo al sistema nacional de protección civil y a los servicios de seguridad, en la forma y circunstancias que requieran los organismos y autoridades competentes.
- g. Acondicionar de forma definitiva y segura los estériles originados en la minería y fabricación de concentrados de uranio, en la forma y circunstancias que requieran los organismos y autoridades competentes, teniendo en cuenta, en su caso, los planes y previsiones del explotador.
- h. Establecer sistemas que garanticen la gestión segura a largo plazo de sus instalaciones para almacenamiento de residuos radiactivos.
- i. Establecer los planes de investigación y desarrollo necesarios para el desempeño de sus funciones.
- j. Efectuar los estudios técnicos y económico-financieros necesarios que tengan en cuenta los costes diferidos derivados de sus funciones para establecer las necesidades económicas correspondientes.
- k. Cualquier otra actividad necesaria para el desempeño de las anteriores funciones.

6. La entidad pública empresarial ENRESA tendrá la consideración de explotador de sus instalaciones para la gestión de los residuos radiactivos a los efectos previstos en la legislación aplicable a las instalaciones nucleares y radiactivas. Asimismo, la entidad actuará como explotador de aquellas otras actividades que desarrolle para las que se determine tal condición.

7. Los servicios de gestión de residuos radiactivos que preste la entidad pública empresarial ENRESA a los explotadores de instalaciones nucleares y radiactivas deberán respetar las prescripciones técnicas contenidas en los correspondientes contratos en vigor, basados en los contratos-tipo aprobados

en su día por el Ministerio de Industria y Energía o, los que se aprueben en un futuro por el Ministerio de Industria, Turismo y Comercio.

8. La gestión financiera del Fondo para la financiación de las actividades del Plan General de Residuos Radiactivos se registrará por los principios de seguridad, rentabilidad y liquidez. Dicha gestión podrá ser encomendada por la entidad pública empresarial ENRESA a un tercero, tras informe favorable del Comité de Seguimiento y Control del Fondo, previa autorización por el Gobierno y en las condiciones que se determinen.

9. Corresponde al Comité de Seguimiento y Control del Fondo la supervisión y control de las inversiones transitorias relativas a la gestión financiera del mismo. Dicho Comité, adscrito al Ministerio de Industria, Turismo y Comercio a través de la Secretaría General de Energía, estará presidido por el Secretario General de Energía y serán miembros de él, el Interventor General de la Administración del Estado, el Director General del Tesoro y Política Financiera y el Director General de Política Energética y Minas, actuando como secretario el Subdirector General de Energía Nuclear. El Gobierno, mediante Real Decreto, podrá modificar la composición del Comité. Las funciones de dicho Comité son las siguientes:

- a. El desarrollo de los criterios sobre la composición de los activos del Fondo.
- b. Realizar el seguimiento de las inversiones financieras, comprobando la aplicación de los principios establecidos en el apartado 8 anterior.
- c. Formular informes con periodicidad semestral, comprensivos de la situación del Fondo y de las inversiones correspondientes a su gestión financiera, así como de la calificación que merezca al Comité, exponiendo las observaciones que considere adecuadas. Dicho informe se entregará a los Ministros de Economía y Hacienda, de Industria, Turismo y Comercio y a la Comisión correspondiente del Congreso de los Diputados.

10. Corresponde al Gobierno establecer la política sobre gestión de los residuos radiactivos y desmantelamiento y clausura de las instalaciones nucleares y radiactivas, mediante la aprobación del Plan General de Residuos Radiactivos, que le será elevado por el Ministerio de Industria, Turismo y Comercio, una vez oídas las Comunidades Autónomas con competencias en materia de ordenación del territorio y medio ambiente, y del que dará cuenta posteriormente a las Cortes Generales.

11. La entidad pública empresarial ENRESA remitirá al Ministerio de Industria, Turismo y Comercio una propuesta de revisión del Plan General de Residuos Radiactivos cada cuatro años y, en todo caso, cuando lo requiera dicho Ministerio, que comprenderá:

- a. Las actuaciones necesarias y las soluciones técnicas que vayan a desarrollarse durante el horizonte temporal del Plan encaminadas a la

adecuada gestión de los residuos radiactivos y el combustible gastado y al desmantelamiento y clausura de instalaciones nucleares y, en su caso, radiactivas.

- b. Las previsiones económicas y financieras para llevar a cabo lo establecido en el apartado anterior.

12. El régimen de contratación de la entidad pública empresarial ENRESA se regirá por las previsiones contenidas al respecto en la legislación de contratos de las Administraciones públicas.

13. El régimen patrimonial de la entidad pública empresarial ENRESA será el establecido en la Ley 33/2003, de 3 de noviembre, del Patrimonio de las Administraciones Públicas, de acuerdo con el artículo 56 de la Ley 6/1997, de 14 de abril, de Organización y Funcionamiento de la Administración General del Estado.

14. El régimen presupuestario, el económico-financiero, el de contabilidad, el de intervención y el de control financiero de la entidad pública empresarial ENRESA será el establecido en la Ley 47/2003, de 26 de noviembre, General Presupuestaria, de acuerdo con lo previsto en el artículo 58 de la Ley 6/1997, de 14 de abril.

15. La contratación del personal por la entidad pública empresarial ENRESA se ajustará al derecho laboral, de acuerdo con las previsiones contenidas en el artículo 55 de la Ley 6/1997, de 14 de abril.

16. Los recursos económicos de la entidad pública empresarial ENRESA podrán provenir de cualquiera de los enumerados en el apartado 2 del artículo 65 de la Ley 6/1997, de 14 de abril. Entre dichos recursos se incluyen el Fondo para la financiación de las actividades del Plan General de Residuos Radiactivos existente en el momento de la constitución efectiva de la entidad pública empresarial ENRESA y los ingresos a que se refiere el apartado 1 de la disposición adicional sexta de esta Ley de los que forman parte las tasas reguladas en el apartado siguiente.

17. A los efectos de lo previsto en el apartado anterior, la financiación de la entidad pública empresarial ENRESA se integrará, entre otros conceptos, por las siguientes tasas por la prestación de sus servicios, cuya recaudación será destinada a dotar el Fondo para la financiación de las actividades del Plan General de Residuos Radiactivos:

- Primero. Tasa por la prestación de servicios de gestión de residuos radiactivos a que se refiere el apartado 3 de la disposición adicional sexta.
 - a. Hecho imponible:

Constituye el hecho imponible de la tasa la prestación de los servicios relativos a las actividades a que se refiere el apartado 3

mencionado en el párrafo anterior, es decir, la gestión de residuos radiactivos y combustible gastado generados en las centrales nucleares y su desmantelamiento y clausura, que sean atribuibles a la explotación de las mismas llevada a cabo con anterioridad al 1 de abril de 2005, así como la gestión de residuos radiactivos procedentes de actividades de investigación que han estado directamente relacionadas con la generación de energía nucleoelectrica y las operaciones de desmantelamiento y clausura que deban realizarse como consecuencia de la minería y producción de concentrados de uranio con anterioridad al 4 de julio de 1984.

b. Base imponible:

La base imponible de la tasa viene constituida por la recaudación total derivada de la aplicación de las tarifas eléctricas y peajes a que se refieren los artículos 17 y 18 de la presente Ley.

c. Devengo de la tasa:

La tasa se devengará el día último de cada mes natural durante el período de explotación de las centrales.

d. Sujetos pasivos:

Serán sujetos pasivos de la tasa a título de contribuyentes las empresas explotadoras titulares de las centrales nucleares.

Serán sujetos pasivos a título de sustitutos del contribuyente y obligados a la realización de las obligaciones materiales y formales de la tasa las empresas que desarrollan las actividades de transporte y distribución en los términos previstos en esta Ley.

e. Tipos de gravamen y cuota:

En el caso de las tarifas eléctricas a que se refiere el artículo 17 de la presente Ley, el tipo por el que se multiplicará la base imponible para determinar la cuota tributaria a ingresar es de 0,173 %.

En el caso de los peajes a que se refiere el artículo 18, el tipo por el que se multiplicará la base imponible para determinar la cuota tributaria a ingresar es de 0,508 %.

f. Normas de gestión:

La tasa correspondiente a la recaudación del penúltimo mes anterior se ingresará mediante declaración-liquidación a efectuar

por el sujeto pasivo sustituto del contribuyente antes del día 10 de cada mes o, en su caso, del día hábil inmediatamente posterior.

Mediante Orden Ministerial se aprobarán los modelos de declaración-liquidación y los medios para hacer efectivo el ingreso de las cuantías exigibles.

Podrán realizarse convenios con entidades, instituciones y organizaciones representativas de los sujetos pasivos de las tasas, con el fin de simplificar el cumplimiento de las obligaciones formales y materiales derivadas de las mismas, así como los procedimientos de liquidación y recaudación.

Esta tasa se integrará a todos los efectos en la estructura de tarifas eléctricas y peajes establecida en esta Ley y sus disposiciones de desarrollo.

- Segundo. Tasa por la prestación de servicios de gestión de residuos radiactivos a que se refiere el apartado 4 de la disposición adicional sexta.

a. Hecho imponible:

Constituye el hecho imponible de la tasa la prestación de los servicios relativos a las actividades a que se refiere el apartado 4 mencionado en el párrafo anterior, es decir, la gestión de residuos radiactivos y combustible gastado generados en las centrales nucleares y su desmantelamiento y clausura, que sean atribuibles a la explotación de las mismas llevada a cabo con posterioridad al 31 de marzo de 2005.

b. Base imponible:

La base imponible de la tasa viene constituida por la energía nucleoelectrónica bruta generada por cada una de las centrales en cada mes natural, medida en kilowatios hora brutos (Kwh) y redondeada al entero inferior.

c. Devengo de la tasa:

La tasa se devengará el día último de cada mes natural durante el período de explotación de las centrales.

En caso de cese anticipado de la explotación por voluntad del titular, la tasa se devengará en el momento en que, de conformidad con la legislación aplicable, se produzca dicho cese.

d. Sujetos pasivos:

Serán sujetos pasivos de la tasa las empresas explotadoras titulares de las centrales nucleares. En caso de que sean varias las titulares de una misma central, la responsabilidad será solidaria entre todas ellas.

e. Determinación de la cuota:

La cuota tributaria a ingresar durante la explotación de la instalación será la resultante de multiplicar la base imponible por la tarifa fija unitaria y el coeficiente corrector que a continuación se señala, de tal modo que la cuota a ingresar será la resultante de la aplicación de la siguiente fórmula:

$$C = B.i. \times T \times C_c$$

En la cual:

- C = Cuota a ingresar.
- B.i. = Base imponible en Kwh.
- T = Tarifa fija unitaria: 0,188 céntimos de €/Kwh.
- C_c = Coeficiente corrector aplicable de acuerdo con la siguiente escala:

Potencia de la central nuclear (Mwe)	PWR	BWR
1- 300	1,15	1,28
301- 600	1,06	1,17
601- 900	1,02	1,12
901-1.200	0,99	1,09

- PWR = Reactores de agua a presión.
- BWR = Reactores de agua en ebullición.

f. Normas de gestión:

La tasa se ingresará mediante declaración-liquidación a efectuar por el sujeto pasivo en el plazo de los tres meses naturales siguientes a su devengo.

Mediante Orden Ministerial se aprobarán los modelos de declaración-liquidación y los medios para hacer efectivo el ingreso de las cuantías exigibles.

En el caso del cese anticipado de la explotación de una central nuclear por voluntad del titular, con respecto a las previsiones establecidas en el Plan General de Residuos, el déficit de financiación que, en su caso, existiera en el momento del cese deberá ser abonado por el titular a la entidad pública empresarial ENRESA durante los tres años siguientes a partir de la fecha de dicho cese, efectuando pagos anuales iguales en la

cuantía que determine el Ministerio de Industria, Turismo y Comercio en base al estudio económico que realice dicha entidad.

Podrán realizarse convenios con entidades, instituciones y organizaciones representativas de los sujetos pasivos de las tasas, con el fin de simplificar el cumplimiento de las obligaciones formales y materiales derivadas de las mismas, así como los procedimientos de liquidación y recaudación.

- Tercero. Tasa por la prestación de servicios de gestión de los residuos radiactivos derivados de la fabricación de elementos combustibles, incluido el desmantelamiento de las instalaciones de fabricación de los mismos.

a. Hecho imponible:

Constituye el hecho imponible de la tasa la prestación de los servicios de gestión de los residuos radiactivos derivados de la fabricación de elementos combustibles, incluido el desmantelamiento de las instalaciones de fabricación de los mismos.

b. Base imponible:

La base imponible de la tasa viene constituida por la cantidad de combustible nuclear fabricado en cada año natural, medida en toneladas métricas (Tm) y expresada con dos decimales, redondeando los restantes al segundo decimal inferior.

c. Devengo de la tasa:

La tasa se devengará el día último de cada año natural en que haya existido fabricación de elementos combustibles.

d. Sujetos pasivos:

Serán sujetos pasivos de la tasa los titulares de las instalaciones de fabricación de elementos combustibles.

e. Tipos de gravamen y cuota:

La cuota tributaria a ingresar será la resultante de multiplicar la base imponible por el tipo de gravamen de 1.539,21 €/Tm.

f. Normas de gestión:

La tasa se ingresará mediante declaración-liquidación a efectuar por el sujeto pasivo en el plazo de los tres meses naturales siguientes a su devengo.

Mediante Orden Ministerial se aprobarán los modelos de declaración-liquidación y los medios para hacer efectivo el ingreso de las cuantías exigibles.

En el caso del cese anticipado de la explotación de una instalación de fabricación de elementos combustibles por voluntad del titular, con respecto a las previsiones establecidas en el Plan General de Residuos, el déficit de financiación que, en su caso, existiera en el momento del cese deberá ser abonado por el titular a la entidad pública empresarial ENRESA durante los tres años siguientes a partir de la fecha de dicho cese, efectuando pagos anuales iguales en la cuantía que determine el Ministerio de Industria, Turismo y Comercio en base al estudio económico que realice dicha entidad.

- Cuarto. Tasa por la prestación de servicios de gestión de residuos radiactivos generados en otras instalaciones.

a. Hecho imponible:

Constituye el hecho imponible de la tasa la prestación de los servicios de gestión de los residuos radiactivos generados en cualesquiera otras instalaciones no comprendidas en el hecho imponible de las tasas previstas en los puntos anteriores.

b. Base imponible:

La base imponible de la tasa viene constituida por la cantidad o unidad de residuos entregados para su gestión, medida en la unidad correspondiente aplicable entre las comprendidas en la letra e siguiente de acuerdo con la naturaleza del residuo y expresada con dos decimales, redondeando los restantes al segundo decimal inferior.

c. Devengo de la tasa:

La tasa se devengará en el momento de la retirada por la entidad pública empresarial ENRESA de los residuos de las instalaciones.

d. Sujetos pasivos:

Serán sujetos pasivos de la tasa los titulares de las instalaciones.

e. Tipos de gravamen y cuota:

La cuota tributaria a ingresar será la resultante de multiplicar la base imponible por los tipos de gravamen siguientes para cada tipo de residuos.

Tipo	Descripción	Tipo
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residuo		gravamen (€/unid.)
	<i>Sólidos</i>	
S01	Residuos sólidos compactables (bolsas de 25 litros)	93,80
S02	Residuos no compactables (bolsas de 25 litros)	93,80
S03	Cadáveres de animales. Residuos biológicos (bolsas de 25 litros)	242,47
S04	Agujas hipodérmicas en contenedores rígidos (bolsas de 25 litros)	93,80
	Sólidos especiales:	
S05	S051: Residuos con Ir-192 como componente activo (bolsas de 25 litros)	93,80
	S052: Sales de Uranio o Torio (bolsas de 25 litros)	175,35
	<i>Mixtos</i>	
M01	Residuos mixtos compuestos por líquidos orgánicos más viales (contenedores de 25 litros)	201,93
M02	Placas y similares con líquidos o geles (bolsas de 25 litros)	93,80
	<i>Líquidos</i>	
L01	Residuos líquidos orgánicos (contenedores de 25 litros)	205,54
L02	Residuos líquidos acuosos (contenedores de 25 litros)	174,81
	<i>Fuentes</i>	
	Fuentes encapsuladas cuya actividad no sobrepase los límites establecidos por el ADR para bultos del Tipo A y el conjunto de la fuente con su contenedor de origen o con el equipo en que va instalada no supere los 20 litros:	
F01	F011: Las fuentes F01 con elementos de semiperíodo inferior o igual al del Co-60	277,66
	F012: Las fuentes F01 con elementos de semiperíodo comprendido entre el del Co-60 y el del Cs-137, incluido éste	277,66
	F013: Las fuentes F01 con elementos de semiperíodo superior al del Cs-137	277,66
	Fuentes encapsuladas cuya actividad no sobrepase los límites establecidos por el ADR para bultos del Tipo A y el conjunto de la fuente con su contenedor de origen o con el equipo en que va instalada sea superior a 20 l e inferior o igual a 80 l:	
F02	F021: Las fuentes F02 con elementos de semiperíodo inferior o igual al del Co-60	515,66
	F022: Las fuentes F02 con elementos de semiperíodo comprendido entre el del Co-60 y el del Cs-137, incluido éste	515,66
	F023: Las fuentes F02 con elementos de semiperíodo superior al del Cs-137	515,66

f. Normas de gestión:

La gestión y liquidación de la tasa corresponderá a la entidad pública empresarial ENRESA. Mediante Orden Ministerial se aprobarán los modelos de liquidación y los plazos y medios para hacer efectivo el ingreso de las cuantías exigibles.

Sobre las cuantías que resulten exigibles por las referidas tasas se aplicará el Impuesto sobre el Valor Añadido que grava la prestación de los servicios objeto de gravamen en los términos establecidos en la legislación vigente.

Los tipos de gravamen y elementos tributarios para la determinación de la cuota de las anteriores tasas podrán ser revisados anualmente por el Gobierno mediante Real Decreto con base en una memoria económico-

financiera actualizada del coste de las actividades correspondientes contempladas en el Plan General de Residuos Radiactivos.

18. El Ministerio de Industria, Turismo y Comercio ejercerá las facultades de expropiación que sean precisas para el cumplimiento de los fines de la entidad pública empresarial ENRESA, la cual tendrá, a tales efectos, la condición de beneficiaria. Las instalaciones necesarias para el cumplimiento de los fines que le son propios se declaran de utilidad pública a efectos de expropiación forzosa.

19. El régimen fiscal y reducción de aranceles en la constitución de la entidad pública empresarial ENRESA es el siguiente:

1. El régimen establecido en el capítulo VIII del Título VII del Texto Refundido de la Ley del Impuesto sobre Sociedades, aprobado por el Real Decreto Legislativo 4/2004, de 5 de marzo, se aplicará a la operación por la cual se transmiten a la entidad pública empresarial ENRESA todos los bienes, derechos y obligaciones de la Empresa Nacional de Residuos Radiactivos, S. A., y a aquélla se transmitirán los derechos y obligaciones tributarias de esta última.
2. Estarán exentas de aranceles u honorarios por la intervención de fedatarios públicos y Registradores de la Propiedad y Mercantiles.

20. La entidad pública empresarial ENRESA sucederá a la Empresa Nacional de Residuos Radiactivos, S. A., en los derechos y obligaciones existentes de esta Sociedad. Mediante acuerdo de Consejo de Ministros se autorizará la disolución y liquidación de dicha empresa y la integración de su patrimonio a la entidad pública empresarial ENRESA, previa liquidación de los derechos de los accionistas. En particular, se integrarán en la entidad pública empresarial ENRESA todos los trabajadores de la Empresa Nacional de Residuos Radiactivos, S. A., entendiéndose que existe sucesión de empresas entre las dos entidades a los efectos de lo previsto en el artículo 44 del Texto Refundido del Estatuto de los Trabajadores, aprobado por Real Decreto Legislativo 1/1995, de 24 de marzo. Asimismo se incorporarán al patrimonio de la entidad pública empresarial ENRESA todos los bienes muebles e inmuebles de la Empresa Nacional de Residuos Radiactivos, S. A.

21. Hasta la constitución efectiva de la entidad pública empresarial ENRESA que tendrá lugar mediante la entrada en vigor de su Estatuto, que será aprobado por Real Decreto, la Empresa Nacional de Residuos Radiactivos, S. A., continuará realizando las actividades previstas en el Real Decreto 1349/2003, de 31 de octubre, sobre ordenación de las actividades de la Empresa Nacional de Residuos Radiactivos, S. A. (ENRESA), y su financiación.

22. Se autoriza al Gobierno para dictar las normas y adoptar las medidas que sean necesarias para la aplicación de lo previsto en esta disposición.

2. Se modifica el apartado 1 de la disposición adicional sexta de la Ley 54/1997, de 27 de noviembre, del Sector Eléctrico (Fondo para la financiación de las actividades del Plan general de residuos radiactivos), que queda redactado de la siguiente manera:

1. Las cantidades recaudadas por las tasas reguladas en la disposición adicional sexta bis, así como cualquier otra forma de financiación de los costes de los trabajos correspondientes a la gestión de los residuos radiactivos y del combustible gastado, y al desmantelamiento y clausura de instalaciones, incluidos los rendimientos financieros generados por ellas, se destinará a dotar una provisión, teniendo dicha dotación la consideración de partida deducible en el Impuesto sobre Sociedades.

Las cantidades recogidas en la provisión antes mencionada sólo podrán ser invertidas en gastos, trabajos, proyectos e inmovilizaciones derivados de actuaciones previstas en el Plan General de Residuos Radiactivos aprobado por el Gobierno.

3. Queda derogado el apartado 5 de la disposición adicional sexta de la Ley 54/1997, de 27 de noviembre, del Sector Eléctrico, relativo a la facturación a los titulares de las centrales nucleares.

List of Accronyms

B.O.E.	Span. Bolitín Oficial del Estado (Official State Gazette)
BWR	Boiling Water Reactor
CIEMAT	Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (Centre for Energy-Related, Environmental and Technological Research)
CSN	Span. Consejo de Seguridad Nuclear (Nuclear Safety Council)
ENRESA	Empresa Nacional de Residuos Radiactivos, S. A.
ENUSA	ENUSA Industrias Avanzadas, S. A.
EPE	Span. Entidad Pública Empresarial (Public Business Entity)
IPC	Span. Índice de Precios al Consumo (Consumer Price Index)
JEN	Junta de Energía Nuclear (Nuclear Energy Board)
Labein	Laboratorios de Ensayos e Investigaciones Industriales (Labein)
MITYC	Span. Ministerio de Industria, Turismo y Comercio (Ministry of Industry, Tourism and Trade)
NPP	Nuclear Power Plant
PEN	Span. Plan de Energético Nacional (National Energy Plan)
PGRR	Span. Plan General de Residuos Radiactivos (General Radioactive Waste Plan)
PIMIC	Span. Plan Integrado para la Mejora de las Instalaciones del Ciemat (Integrated Plan for Improvement of the Ciemat facilities).
PWR	Pressurised Water Reactor
RD	Royal Decree
RINR	Span. Reglamento de Instalaciones Nucleares y Radiactivas (Regulation on Nuclear and Radioactive Facilities)
RR	Research Reactor
SEPI	Span. Sociedad Española de Participaciones Industriales (Spanish State Industry Holding)
SF	Spent fuel